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THE ANNUAL REPORT OF THE SCHOOLHOUSE DEPARTMENT

FROM JANUARY 31, 1903, TO
FEBRUARY 1, 1904



BOSTON
MUNICIPAL PRINTING OFFICE
1904

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1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840.

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1904

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Boston, Board of Schoolhouse Commissioners
June 18, 1914.



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BUILDINGS IN CHARGE OF SCHOOLHOUSE DEPARTMENT.

| | |
|--|-----|
| Number of Permanent School Buildings in charge of this
Department | 217 |
| Of the above, there are in use as storehouses, etc. | 5 |
| Number of Portable Buildings | 92 |
| Number of Hired Buildings | 43 |
| Giving Class-rooms to the number of | 84 |
| Number of New Buildings finished by Commission | 3 |
| Number of Buildings under construction at the present
time | 8 |

REPORT OF THE COMMISSIONERS.

HON. PATRICK A. COLLINS,

Mayor of the City of Boston :

DEAR SIR, — In accordance with the provisions of chapter 473 of the Acts of 1901, the Board of Schoolhouse Commissioners submit herewith their second annual report, covering the period from January 31, 1903, to February 1, 1904.

I.

POWERS OF THE BOARD.

Although this matter was carefully stated in the first annual report, there have been so many requests from those in authority, indicating that the powers of this Board are not generally understood, that we may be permitted to state again, quite briefly, the situation. Under the Act (chapter 473 of the Acts of 1901) provision was made for the issue of bonds during the year 1901 and the three succeeding years (p. 5, first annual report). The amounts thus authorized are available for three distinct purposes, and for no other work. These are, first, the list of forty-two items (pp. 3-4, first annual report); second, new sanitation, including heating and ventilation of the old buildings; third, better means of egress in case of fire, from the old buildings.

None of this appropriation entitled "Land and Buildings for Schools" is available for other necessary permanent accommodation, which, not being apparent in 1901, was not on the list of forty-two items. Nor is any of this appropriation available to complete buildings or grounds which were handed over in an incomplete state by the Committee on New Buildings of the School Committee.

The Commissioners are of the opinion that when the Act was drawn it was the intention that the accommodation required year by year to meet the growth of school population would be met by an appropriation of forty cents on the \$1,000 from the taxes; but, up to the present time, no such appropriation has been made, and the Commissioners have not only been unable to finish the Dorchester High School, South Boston High School, Bigelow School, Chapman School, and the Ira Allen School, turned over to the Board incomplete by the School Committee, but have also been unable to undertake the buildings or additions necessary to house the yearly increase of 1902 and 1903, which needs, not being evident in 1901, of course, are not found in this list of forty-two items. Instead of an appropriation for current growth, the amount of the loan has been increased, so that the Board have had available more money than was originally contemplated; but, owing to the wording of the Act, this did not enable them to care for items not mentioned in the list. If the Act were made more elastic and the Board were able to use the money where most needed, under the advice of the Superintendent of Schools, there would be no further difficulty.

As it now stands, the balance turned over to the Commissioners by the School Committee has been expended (pp. 73-74, first annual report); the work of the Board has therefore been wholly confined this year, first, to providing increased accommodation as called for in the list of forty-two items, and improving the condition of the old buildings as to sanitation and fire risk; and second, to repairs. The first will be considered under three heads; viz.: 1. Accommodation. 2. Sanitation. 3. Fire Escapes and Fire Protection. And the second under a single heading.

II.

WORK EXECUTED UNDER APPROPRIATION,
LAND AND BUILDINGS FOR SCHOOLS.

(1.) ACCOMMODATION.

On the items reported last year (pp. 8-9) progress has been made as follows :

Item 7. A primary building in the Christopher Gibson District. The building was to be completed July 31, 1903; the time for completion was extended, for cause, to August 8, and it was completed August 7, the contractor receiving one day's bonus. Owing to the time consumed in a series of experiments with school chairs (Appendix VI.) there was delay in the delivery of the furniture, but the school was occupied October 8, 1903. The original contract was \$122,178, and the cost, including changes, was \$124,467.65. This building is named "Marshall School."

Item 8. A grammar building in the Roger Clap District. This building was in four contracts, but an attempt was made, by asking the general contractor to name a date for completion in submitting bid, to enforce a forfeiture contract. The forfeit was omitted from the heating, plumbing, and electrical contracts, the contractors being notified that they would be held responsible to the city for delay caused by them. The completed cost compares with the original contract prices as follows :

| | Original Contracts. | Contracts Complete. |
|---------------------------|---------------------|---------------------|
| General contract . . . | \$155,980 00 | \$158,189 52 |
| Heating | 14,300 00 | 15,132 40 |
| Plumbing | 8,120 00 | 9,580 29 |
| Electrical contract . . . | 5,478 00 | 5,622 35 |
| Totals | <u>\$183,878 00</u> | <u>\$188,524 56</u> |

Owing to the difficulties of adjudging claims for delay, and placing the responsibility where it belonged, the Commissioners accepted the architect's finding that the general contractors were delayed by the city thirty-five days. The building was delivered eight days after this, or forty-three days late in all, and a forfeit of \$160 was enforced. No attempt was made to make good a claim for damages for delay against the other contractors, as it seemed impracticable to show just cause. The Commissioners are confirmed in their opinion that, except with a single contract,

it is impracticable to enforce a time limit. The building was occupied October 27, 1903, and is named "William E. Russell School."

Item 1. A grammar and primary building in the Phillips District. This building was let in four contracts, and here, also, an attempt, but of a different kind, was made to insure completion. The contractor for the building agreed with the Board on a reasonable time, fourteen months, increased to fifteen months on account of weather, *i.e.*, March 6, 1904, and the specifications required a bond that the steel should be delivered at a fixed time. The steel was not delivered on time, and the bond is considered forfeited in part or whole, depending on whether the building is finished on time. It is evident now that this is impossible. It will undoubtedly be ready for occupancy for the fall term of 1904. The contractors have proved entirely incompetent to handle such an important piece of work, and are now in the hands of receivers. The building is named "Washington School." The cost to date compares with the original contract prices as follows:

| | Original Contracts. | Amount of
Contracts to date. |
|------------------------|---------------------|---------------------------------|
| General contract . . . | \$263,949 00 | \$263,398 70 |
| Heating " . . . | 25,112 00 | 26,089 45 |
| Plumbing " . . . | 18,995 00 | 20,326 98 |
| Electrical " . . . | 11,664 00 | 11,721 50 |
| Totals . . . | <u>\$319,720 00</u> | <u>\$321,536 63</u> |

Item 6. A primary building, Martin District. Here a second attempt was made to put the general contractor under forfeit when there were four contracts. The building was due October 31, 1903. The contractor was delayed by encountering an unexpected amount of blasting. Technically he was fully responsible for this, as he contracted to do all excavation, but to avoid such difficulties the Board now make borings and give the results to the architects, not as a guaranty, but as a guide as to the nature of the soil. The building was occupied January 18, 1904, and is named "Farragut School." The cost to date compares with the original contract prices as follows:

| | Original Contracts. | Amount of
Contracts to date. |
|------------------------|---------------------|---------------------------------|
| General contract . . . | \$127,609 00 | \$127,232 57 |
| Heating " . . . | 11,697 00 | 12,345 00 |
| Plumbing " . . . | 5,894 00 | 6,821 45 |
| Electrical " . . . | 3,561 00 | 4,031 50 |
| Totals . . . | <u>\$148,761 00</u> | <u>\$150,430 52</u> |

Item 4. A primary building in the Emerson District. No attempt was made here to do more than fix a reasonable date for completion. A strike of the bricklayers stopped work altogether on this building for two months to the serious detriment of the city. The building was due November 7, 1903, and even allowing two months for the strike should have been completed January 7, 1904. It will be ready for occupancy in April, 1904. The building has been named "Paul Jones School." A material reduction was made in the cost of this building when the contracts were signed, and the cost to date compares as follows with the contract price:

| | Original Contracts. | Amount of
Contracts to date. |
|------------------------|---------------------|---------------------------------|
| General contract . . . | \$104,400 00 | \$95,174 00 |
| Heating " . . . | 9,600 00 | 9,808 00 |
| Plumbing " . . . | 5,649 00 | 5,324 00 |
| Electrical " . . . | 3,267 00 | 3,528 00 |
| Totals . . . | <u>\$122,916 00</u> | <u>\$113,834 00</u> |

Item 2. A grammar building in the Lowell District. The whole site of this building required blasting, which occupied over four months. Like the previous building, it also was delayed two months by the bricklayers' strike. It was to have been completed February 1, 1904, but undoubtedly will not be ready for occupancy until the fall term. The building has been named "Jefferson School." The cost to date compares with the original contract prices as follows:

| | Original Contracts. | Amount of
Contracts to date. |
|------------------------|---------------------|---------------------------------|
| General contract . . . | \$187,600 00 | \$181,272 50 |
| Heating " . . . | 15,567 00 | 15,672 50 |
| Plumbing " . . . | 5,827 00 | 6,287 00 |
| Electrical " . . . | 5,071 00 | 5,193 00 |
| Totals . . . | <u>\$214,065 00</u> | <u>\$208,425 00</u> |

Item 5. A primary building in the George Putnam District. This building has met with no unusual delays except those which are incident to all contractors who have not had wide experience in handling large work. It was to have been completed February 1, 1904, but will be ready for occupancy in April, 1904. The building has been named "Ellis

Mendell School." The cost to date compares with the original contract prices as follows:

| | Original Contracts. | Amount of
Contracts to date. |
|------------------------|---------------------|---------------------------------|
| General contract . . . | \$104,500 00 | \$103,186 40 |
| Heating " . . . | 8,985 00 | 8,985 00 |
| Plumbing " . . . | 5,420 00 | 5,420 00 |
| Electrical " . . . | 3,151 00 | 3,386 00 |
| Totals . . . | <u>\$122,056 00</u> | <u>\$120,977 40</u> |

The new work begun this year by the Board is as follows:

Item 15. A large primary building in the Eliot and the Hancock District. Under instructions from the School Committee this building was planned to contain twenty-two classrooms and a manual-training room. Land was bought adjacent to the Ware School lot on North Bennett street, an area of 6,419 square feet, for which \$52,345.40 was paid. Messrs. Winslow & Bigelow were appointed architects, and the building was let July 16, 1903, in a single contract, with a forfeiture and bonus clause of \$50 per day, to be finished within eleven months from date of contract. It has progressed smoothly and rapidly, and but for the severe weather during the month of January, 1904, would have been roofed in by February 1, 1904. The building will be ready for occupancy for the fall term. The original contract on this building amounted to \$172,213; the amount of contract to date is \$173,545.28.

Item 19. Mechanic Arts High School to be enlarged. This addition was for the purpose of supplementing both the academic and mechanic parts and dividing them. This required a very careful study of the plan before a site could be purchased. For this purpose the architects, Messrs. Wheelwright & Haven, were appointed November 26, 1902, before the land was purchased, and after careful study, with preliminary drawings, of the available sites, the Board determined that the land immediately adjoining the old building would work to better advantage to give a compact and workable building, and accordingly took the land on Scotia street adjoining the present building, 14,419 square feet. The Board of Street Commissioners not having notified this Board of the settlements made with the owners of the property taken, nothing has been paid on account of this site. The plans are rapidly approaching completion and the work will be advertised in the spring.

These items, Nos. 15 and 19, were mentioned first on the list by the School Committee, and instructions as to accommodation were given. The items which follow were first given to the Board with a partial statement of the requirements March 12, 1903. (Minutes Committee on School Houses, February 21, March 9, and Minutes of the School Committee, February 24 and March 10, 1903.) Later more definite instructions were given for Item 36, Dearborn District, and Item 23 was reduced from twenty class-rooms to twelve. Where land was already available, as on Meeting House Hill, the Old Gibson and the Brentwood-street lots, architects were appointed at once. In cases where land was required, the architects were appointed only after the land was taken. Thus the plans of the various buildings were not started simultaneously. The Board has allowed the work to proceed as the plans were finished. Thus, Items 25 and 26 were ready first and were let; Items 30, 13 and 14 combined, and 37 were ready next. The order in which the buildings were let is not therefore any evidence as to the priority of claims of any district. As a matter of fact, two of the most urgent have been held up, one by a change made by the School Committee in their order as to accommodation after the plans were well advanced, the other due to a change in construction made necessary to meet certain requirements.

Item 26. Mather District, on Meeting House Hill, a grammar school-house. The School Committee gave instructions for a twenty-eight room grammar building, with assembly hall; later the completion of a cooking-room and three class-rooms in the basement was approved, making a total of thirty-one class-rooms. Messrs. Cram, Goodhue & Ferguson were appointed architects February 2, 1903; the building was let in four contracts, as follows:

| | | | | | | |
|------------------|---|---|---|---|---|---------------------|
| General contract | . | . | . | . | . | \$228,395 00 |
| Heating | " | . | . | . | . | 25,795 00 |
| Plumbing | " | . | . | . | . | 10,617 00 |
| Electrical | " | . | . | . | . | 7,490 00 |
| Total | . | . | . | . | . | <u>\$272,297 00</u> |

Later the finishing of the four basement rooms increased this amount to \$285,179.60. A forfeiture and bonus clause was attached to the general contract, and another attempt will be made here to enforce these provisions. The date for completion was fixed at fourteen months from September 29, 1903, and with the acceptance of the amount for the addi-

tional class-rooms in basement, the time for completion was extended twenty days; it is therefore due October 19, 1904.

Item 25. Jamaica Plain, Agassiz District, south of Forest Hills Station, grammar school-house. In considering the needs to be met by this item the School Committee determined that they would best be met by an addition to the Francis Parkman School. This four-room building was incomplete and accommodation urgently required. The rooms were of grammar size, and it seemed economy to complete this with a view to its being eventually a grammar building rather than to buy land and erect a new one. The order called for a four-room addition, and the plans originally prepared were to be modified to fit a further addition of assembly hall and four more class-rooms. Mr. Charles Bruen Perkins, the architect of the original building, was appointed, and the building was let in four contracts as follows:

| | | | | | | |
|------------------|---|---|---|---|---|--------------------|
| General contract | . | . | . | . | . | \$26,980 00 |
| Heating | " | . | . | . | . | 5,697 00 |
| Plumbing | " | . | . | . | . | 1,627 00 |
| Electrical | " | . | . | . | . | 435 00 |
| Total | . | . | . | . | . | <u>\$34,739 00</u> |

Item 10. New District, Old Gibson site, Dorchester, a large grammar school-house. The School Committee asked for twenty-one class-rooms, an assembly hall, and a manual-training room and cooking-room in the basement. To prepare the site it was necessary to remove both buildings now on this site. The Gibson Annex was moved to the Glenway site, and the Old Gibson removed to the corner of the present lot, where it is better lighted, has been provided with better sanitary accommodation, and will be a serviceable building for many years. Mr. A. W. Longfellow was appointed architect April 8, 1903, and plans have been completed for this building, but, owing to a necessary change in the construction, they had to be partially redrawn. They will be advertised in the spring.

Item 36. Dearborn District. A new grammar building to replace the present building was defined by the School Committee as a twenty-one room building with assembly hall, and manual-training room and cooking-room in the basement. Mr. Edwin J. Lewis was appointed architect April 21, 1903, and plans have been prepared in such a way that the new building will not seriously interfere with the old while being constructed, and the old building may stand until such time as an extension of twelve rooms will make the new building

complete, with thirty-three class-rooms. The plans are complete, and the building will be advertised in March, 1904.

Item 30. Washington Allston District, Brentwood-street site. The Committee described the accommodations as a fourteen-room building with assembly hall, and cooking and manual-training rooms in the basement, and a possible twelve-room addition. Messrs. Stickney & Austin were appointed architects April 24, 1903. The following contracts have been advertised and awarded:

| | |
|----------------------------|--------------|
| General contract | \$114,730 00 |
| Plumbing " | 5,919 00 |

The contracts for the heating and ventilating and electrical work will be advertised and awarded during February, 1904.

Items 13 and 14. Additions to the Gaston and Lincoln Schools were changed for an item to cover the needs of both schools — a new grammar school, City Point. This, however, was not done until after Messrs. Clough & Wardner had been appointed architects of the addition to the Gaston School, and had prepared complete plans for an addition much larger than that contemplated in the original order. The School Committee asked that the new building contain fourteen class-rooms, an assembly hall, and manual-training and cooking-room in basement. For this purpose land was taken on East Eighth street containing 45,000 square feet. Messrs. Clough & Wardner were appointed architects April 24, 1903. Contracts for the erection and completion of this building will be advertised and awarded during February, 1904.

Item 38. Lyman District. Replace the present Webb School with a new primary. The Webb School is in fair condition, and, as the lot is small and not very central, it was thought best to purchase land elsewhere. For this purpose land was taken on the corner of Paris, Morris, and Marion streets containing 26,000 square feet. Until the Board of Street Commissioners report to this Board as to the different settlements made with the numerous owners of this land, no definite amount can be given as the cost of the same. The School Committee asked for twelve rooms of the smaller grammar size, 24 by 32. Mr. John Lyman Faxon was appointed architect April 24, 1903, and has completed plans. Bids will be asked for during the month of April, 1904.

Item 23. Hugh O'Brien District, a new Primary School. The School Committee asked for a twenty-four room primary building, and the Board took for this purpose a lot on

Norfolk avenue, comprising 56,006 square feet, for which \$17,081.83 was paid. Mr. John A. Fox was appointed architect April 30, 1903; but, after preparing plans for the twenty-four room building, the School Committee, on September 22, 1903, amended the order to read, "twelve or fourteen class-rooms with provision for future addition." As the Commissioners believe it poor policy, as a rule, to build with a view to a large extension on account of the difficulty of arranging the heating, ventilating, and other matters, they asked Mr. Fox to plan for a twelve-room building, so placed on the lot as to make a similar building possible in the future. The preparation of the plans was thus seriously delayed, but they will be ready to advertise in the spring.

Item 37. John A. Andrew District. Replace the present Ticknor with a new primary school. With the widening of Dorchester street this became imperative, as the Board of Street Commissioners' widening destroyed the old building, which was not fit to be moved. The Board took land in the rear of the present lot, comprising 17,095 square feet, for which \$12,375 was paid. The School Committee gave instructions for a fourteen-room primary, with cooking-room and manual-training room in the basement. Later they amended this to put the manual-training room on the first floor and omit the cooking-room, the Bird School on East Fourth street supplying the need, thus freeing the basement for the play-rooms. The board appointed Messrs. Andrews, Jaques & Rantoul architects November 17, 1903. Plans and specifications have been completed, and the building will be advertised during the month of February, 1904, and let under one contract, with a forfeiture and bonus of \$50 per day. This is one of the few instances where the commissioners have had the drawings made with reasonable despatch, but they hope that with the gradual development of a fixed system in planning and specifying for school buildings this despatch may in future be the rule rather than the exception.

Item 27. Henry L. Pierce District. In the vicinity of Bailey street, a primary school. With the advice of the Superintendent of Schools and Mr. Warren, the master of the district, the vicinity of Codman square was substituted, and the School Committee asked for a building containing ten rooms. For this purpose land was taken on Southern avenue containing 34,374 square feet. Messrs. Parker & Thomas were appointed architects November 24, 1903, and are now preparing plans, which will be ready to advertise in the spring.

Items 20, 21, and 22 have been a source of constant consideration and study on the part of the Board for over twelve months. The School Committee on December 12, 1901, instructed the Board that the Normal School was to be located in the Dudley, Dillaway, and Lewis Districts, thus embodying under the names of the districts the original location given in Item 20, the vicinity of Dudley street station. The Board advertised and received bids, and made careful examination of the various lots, both by themselves, and with the Superintendent of Schools, the master of the Normal School, and members of the School Committee. In the meantime, the School Committee had instructed the Board that the Girls' Latin School was to be located in the Martin District, and bids had been opened for land for this school. It was then found that land could be bought in this important educational centre at a price comparing favorably with the land near Dudley street; and that, if enough land were taken for the Girls' Latin, the Normal and the Training Schools, still more favorable terms could be obtained. The School Committee then reconsidered the location of the Normal School, and directed the Board on June 23, 1903, that it be located in the Martin District. Again the Board advertised and received bids. After many unavoidable delays, complicated by a number of offers received later for other parcels of land, of all of which the Board made personal examination, the Board decided on a lot on Worthington street. From every point of view this land seemed to the Board to be an advantageous proposition; the location was central, the amount of land was ample and entirely protected as to light. It had the advantage of another large lot adjacent, occupied by the detached buildings of Simmons College. It was therefore greatly to be deplored that the School Committee reversed their previous vote locating the Normal School in the Martin District. This action, withdrawing the Normal School, withdrew also the Training School, and thus altered the situation as regards the cost of the land for the remaining item — the Girls' Latin School.

(2.) SANITATION.

Continuing the work of last year, the Board has this year supplied twenty-two schools with new plumbing systems in place of the old defective plumbing, and have in each case taken care of conductors and yard catch-basins, and connected to the sewers with iron pipe. The Board find that in the primaries certainly the latrines have given excellent satisfaction,

and, except for the amount of water used, are better than individual closets. The control of the water rests with the janitor, and the amount need not be excessive. On the other hand, there is a considerable popular dislike of the latrine, which, even if it has no tangible ground, the Board do not like to disregard, and they have increased the use of the standard short-hopper closet. This type has given general satisfaction, but it is more easily damaged by mischievous boys, has more joints, and is not so easy to keep clean.

In regard to doors for the water-closets, the Board consider this a matter of administration, and where the masters prefer doors are willing to include them. They, themselves, consider them unnecessary in primaries on either side, and in grammars on the boys' side.

The construction of urinals has been a fruitful source of discussion; the Commissioners, being unable to agree with the Superintendent of Schools, the Committee on School Houses, and many masters, who think an undivided urinal an invitation to immodesty, have continued to install this type which has commended itself to them because so thoroughly sanitary and so readily kept clean.

In the following schools new sanitation has been installed:

BARTLETT-STREET SCHOOL. Six-room primary building in the Dillaway District — old vaults in yard removed and new building, connected with basement, erected for installation of new sanitation, 2 sets of 5 and 1 set of 4 porcelain-lined latrines for pupils, 18 feet of slate urinal, 4 slate sinks, 1 drinking font, 1 galvanized-iron sink, 1 teachers' closet and bowl, 3 catch-basins, new yard drainage, fan system of local ventilation; cost \$9,056.14, finished in September, 1903.

BOWDITCH SCHOOL. Fourteen-room grammar building for girls, Bowditch District — old cremating system in basement removed, and new system installed in basement; 30 short-hopper closets for pupils, 1 large slate sink, 1 large soapstone sink, 1 catch-basin, 2 floor-washes, 1 cellar drain, all new vents, wastes and supplies in connection with pupils' closets, electric fan system local ventilation; cost \$4,264.90, finished in September, 1903.

CLINCH SCHOOL. Six-room primary building in Shurtleff District — old vaults in yard removed, new building connected with basement erected for installation of new system, 1 set of 8, 1 set of 4 porcelain-lined latrines for pupils, 30 feet of slate urinal, 5 slate sinks, 3 catch-basins and yard drainage, 2 wash-down closets for teachers and janitor, hot-water heater to heat sanitariums, electric fan system of local ventilation; cost \$7,486.96, finished in September, 1903.

DUDLEY SCHOOL. Fourteen-room grammar building, Dudley District — seven new slate sinks with vents, wastes and supplies

installed, also new teachers' closet, 1 wash bowl and 4 sill-cocks; cost \$1,117, finished in January, 1904.

ELIOT SCHOOL. Fourteen-room grammar building, Eliot District — old vault in yard removed and new system installed in basement, 8 porcelain-lined latrines, 42-foot slate urinal, 1 wash-down closet, 1 marble slab and bowl, new piping to bowl in master's closet, 1 sill-cock, 2 catch-basins, 2 conductors, new vents, drains and supplies; cost \$3,928.35, finished in September, 1903. The basement sanitariums are a temporary fit, to be removed when the new primary school-house is completed; the remainder of the work is permanent.

ENGLISH HIGH AND LATIN SCHOOL. With few exceptions, entire old system removed and following installed: 33 wash-down closets, 32 individual urinals, 15 slate sinks, 1 galvanized-iron sink, 8 porcelain slop sinks, 8 sponge baths, 8 shower baths, 1 bath and shower for janitor, 8 catch-basins, 2 manholes and all yard drainage, 4 floor washes, 1 blow-off tank, conductor connections for 43 conductors, hot-water heater, 3 sill-cocks, all new wastes, vents and supplies to physical lecture room and laboratory, 4 electric fans for local ventilation system; cost \$63,657.64. All work, with the exception of alterations in physical lecture room and laboratory, finished in September, 1903.

EVERETT SCHOOL. Two-room primary building, Washington Allston District, Brighton. The building moved to new location and sanitariums placed in the basement. New cellar drain, new supply pipes and new drain; temporary sanitariums were installed while work was in progress; new furnace installed, new foundation placed under building; cost \$3,618.50, finished in October, 1903.

FREEMAN SCHOOL. Six-room primary building, Eliot District, mentioned in 1902 report — old system removed, also vault in yard; new system installed in basement, 1 set of 6, 1 set of 10 wash-down latrines, 15 feet of slate urinal, 3 slate sinks, 2 drinking fonts in sinks, janitor's sink, 2 porcelain drinking fonts, 2 catch-basins, 4 conductors, 2 sill-cocks, local ventilation, vacuum system; cost \$4,989.49, finished in September, 1903.

FLORENCE-STREET SCHOOL. Six-room primary building, Charles Sumner District — work mentioned in 1902 report as being partly finished; cost \$4,772.97, finished in March, 1903.

GEORGE-STREET SCHOOL. Six-room primary building, Hugh O'Brien District — old flush vault in yard removed, new building connecting with basement erected for installation of new system, 2 sets of 7 each and 1 set of 5 latrines, 24 feet of slate urinal, 5 slate sinks, 1 galvanized-iron sink, 1 teachers' water-closet and bowl, 4 catch-basins, 4 conductors, 1 floor wash, 2 sill-cocks, new supply, vents and waste pipes, local ventilation fan system, hot-water heater for sanitariums; cost \$9,221.89, finished in October, 1903.

HARBOR VIEW-STREET SCHOOL. Four-room primary building, Roger Clap District — old vault in building removed; new system installed in basement, 3 sets of 6 each porcelain-lined latrines, 12 feet of slate urinal, 1 teachers' closet and bowl, 4 slate sinks, 1 galvanized-iron sink, 4 catch-basins, 6 conductors, 1 floor-wash, new supply, waste and vent pipes, 4 hose bibbs, electric fan system local ventilation; cost \$4,160.75, completed in September, 1903.

LAWRENCE SCHOOL. Fourteen-room grammar building, Lawrence District — old outhouse in yard removed and new system installed in basement, 11 short-hopper closets for pupils, 3 teachers' and 1 janitor's closets, 5 slate sinks, 1 galvanized-iron sink, 3 catch-basins, 1 blow-off tank, new waste, supply and vent pipes, fan system local ventilation; cost \$5,827.46, finished in September, 1903.

OLD DORCHESTER HIGH SCHOOL. Eight-room primary building, Mary Hemenway District — old vault in basement removed and new sanitation installed in basement, 20 short-hopper closets, 1 janitor's closet, 1 teachers' closet and bowl, 22-foot slate urinal, 8 slate sinks, 4 fonts in sinks, 1 galvanized-iron sink, 2 catch-basins, building repaired throughout, new floors and stair treads laid, entire building tinted and painted, mason and carpenter work in connection with new heating and ventilating plant included in general contract, old boilers taken down, cleaned, 11 sections added to each and reset, new grates installed, old system of isolated indirect stacks and floor registers, together with piping and old radiators, removed and new gravity system installed, old pipes and radiators removed, new system of indirect radiators installed; cost \$15,938.18, finished in September, 1903.

OLD EAST BOSTON HIGH SCHOOL. Six-room primary building, Lyman District — old vault in yard removed and new system installed in basement, 12 short-hopper closets for pupils, 2 wash-down closets for teachers, 16-foot slate urinal, 6 slate sinks, 1 galvanized-iron sink, 2 catch-basins, 2 tide traps, electric fan system of ventilation; cost \$5,125.70, finished in September, 1903.

OLD GIBSON SCHOOL. Six-room primary building, Christopher Gibson District — building moved to new location and old cremating system in basement removed and new system of sanitation installed in basement; 1 set of 8, 1 set of 4, and 1 set of 7 porcelain-lined latrines, 21 feet slate urinal, 1 teachers' closet and bowl, 3 slate sinks, 1 galvanized-iron sink, 1 floor-wash; work finished in October, 1903, contracts still unsettled; approximate cost to date \$13,796.68.

OLD ROXBURY HIGH SCHOOL. Eight-room primary building, Dillaway District — old system of vaults in yard removed and new system installed in basement, 12 short-hopper closets for pupils, 2 wash-down closets for kindergarten, 1 teachers'

closet, 1 janitor's closet, 6 slate sinks, 1 galvanized-iron sink, 1 teachers' lavatory bowl, 2 catch-basins and yard drainage, 4 conductors, 1 blow-off tank, 2 sill-cocks, fan system of local ventilation; cost \$6,559.95, finished in September, 1903.

PHILLIPS-STREET SCHOOL. Eight-room primary building, Comins District — old vaults in yard removed and new system installed in basement, 1 set of 6, 1 set of 7 porcelain-lined latrines for pupils, 16-foot slate urinal, 1 closet and bowl for teachers, 1 janitor's closet, 4 slate sinks with drinking fonts, 4 catch-basins, 6 conductors and yard drainage, 1 floor-wash, 2 hose-bibbs, fan system of local ventilation; cost \$5,966.80, finished in September, 1903.

PRESCOTT SCHOOL. Ten-room grammar building, Prescott District — new water main from street, approximately 150 running feet, and thence throughout building, leaving out branches for future work; cost \$754.78, finished in October, 1903.

SHURTLEFF SCHOOL. Sixteen-room grammar building for girls, Shurtleff District — old vaults in yard removed and new system intalled in basement, 23 short-hopper closets for pupils, 3 closets for teachers, 1 closet for janitor, 8 slate sinks, 1 galvanized-iron sink, 3 catch-basins and yard drainage, 8 conductors, 2 floor washes, 4 sill-cocks, general repairs to heating stacks, fan system for local ventilation. In excavating for new work it was found necessary to do considerable blasting; cost \$8,613.50, finished in September, 1903.

STOUGHTON SCHOOL. Eight-room primary building, Gilbert Stuart District — old cremating system in basement removed and new system installed in basement, 1 set of 6 and 1 set of 8 porcelain-lined latrines, 15 feet slate urinal, 1 closet and 1 bowl for teachers, 4 slate sinks, 2 catch-basins and yard drainage; cost \$5,033.85, finished in September, 1903.

WALNUT-STREET SCHOOL. Seven-room primary building, Minot District — old vault in yard removed and new building connecting with building erected for installation of new sanitation, 1 set of 7 and 1 set of 8 porcelain-lined latrines, 15 feet slate urinal, 1 janitor's closet, 1 teachers' closet and bowl, 3 slate sinks, 1 galvanized-iron sink, 4 conductors, 2 catch-basins, janitor's room, heating and ventilating system remodelled; cost \$5,589.81, finished in September, 1903.

WELLS SCHOOL. Twelve-room grammar building, Wells District — work mentioned in report of 1902 as being partly finished; the work cost \$7,895.87, finished in March, 1903.

The following heating and ventilating work was included this year under the head of Sanitation:

BRIGHTON HIGH SCHOOL. One new fan installed, old engine thoroughly overhauled and put in good condition, all

old piping and radiators removed from building, new radiators and coils installed throughout the building, steam system entirely rearranged, the walls were patched, plastered and painted, automatic temperature control system installed; cost \$6745.79, finished in September, 1903.

BIGELOW SCHOOL. Grammar School, Bigelow District, South Boston — receiving tank, feed pump, and inspirator installed so boilers could be fed when the proper steam pressure was maintained for running engine, new fan installed; cost \$1,836.25, finished in September, 1903.

GIRLS' HIGH SCHOOL. During the summer vacation the apparatus was wholly rearranged; the old system of stacks and floor registers entirely removed, together with old style radiators and piping, and new fan system for heating and ventilating building installed, two boilers raised to bring water level of all boilers on same line, new 12-foot Sturtevant fan installed, new Sturtevant engine installed, the building is divided into two separate systems which will admit of certain rooms being heated while other parts of building shut off, the piping is arranged to utilize exhaust steam from engine either in the heating system or vent-flue system as may be desired, a system of automatic control installed; during the progress of the heating and ventilating alterations the attic story was fireproofed and additional corridors, stairways, and studios were built, and new dormer windows installed to furnish additional light for entire story, studios were fitted with necessary fittings, the electric lighting system was overhauled and new fixtures installed, additional plumbing fixtures with supplies, wastes and vent pipes were installed in upper story; work finished in October, 1903, contracts still unsettled; approximate cost to date \$44,693.64.

NORMAL SCHOOL. To improve the ventilation of the building, two 48-inch direct connected propeller fans and motors were installed in the two main vent shafts; cost \$1,099, finished in June, 1903.

ANDREWS SCHOOL. Old gas engine removed and a six-horse power direct connected motor installed; main heating chamber rearranged, ducts overhauled and dampers connected with automatic control system; cost \$1,373, finished in September, 1903.

MISCELLANEOUS SCHOOLS. During the year the Commissioners voted to set aside the sum of \$8,627 for improving the ventilation of sanitariums in miscellaneous school-houses. Of this sum there has been expended an amount of \$5,866.

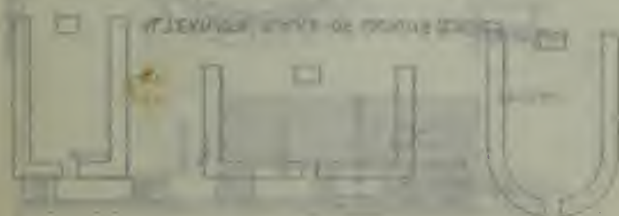
TEMPORARY BUILDING, HANCOCK SCHOOL YARD. To relieve the Eliot and Hancock District until the new primary building in this district was erected a building was erected in the Hancock yard; owing to its dangerous position, the building is of fireproof construction; cost \$7,205.46, finished in June, 1903.

DETAIL

ENT -



APPENDIX VII.

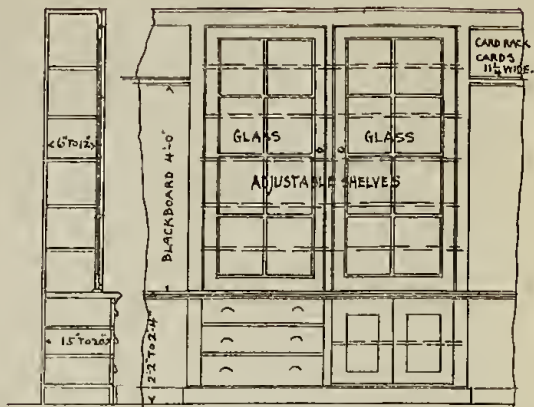


• COOKING ROOM FITTINGS •

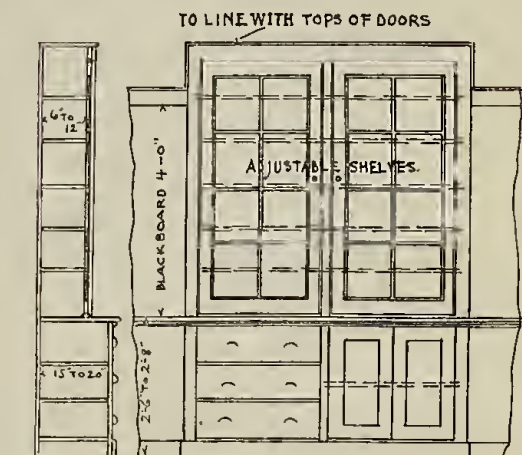
STANDARDS OF GENERAL DETAIL

CITY OF BOSTON SCHOOLHOUSE DEPARTMENT

BOOK CASES

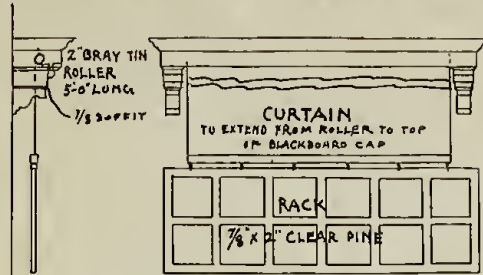


BOOK CASE FOR PRIMARY SCHOOLS

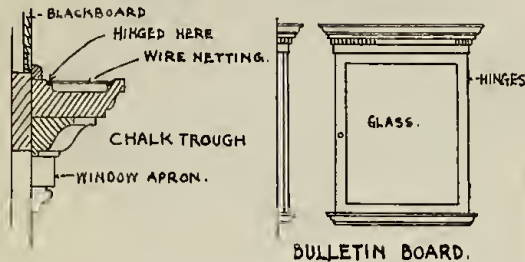


BOOK CASE FOR GRAMMAR SCHOOLS

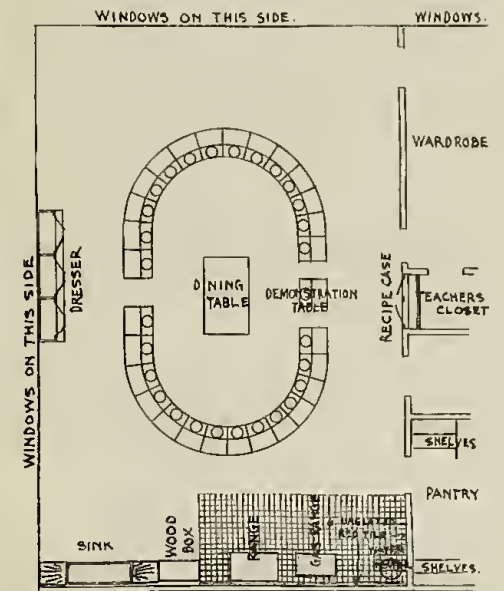
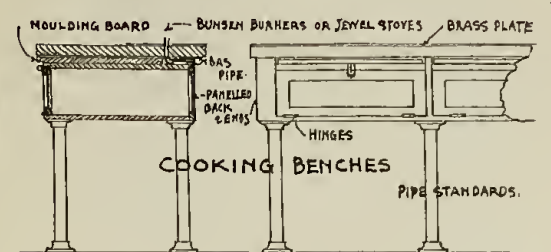
MAP HOLDER, CHALK TROUGH, BOXES, ETC.



MAP HOLDER SCALE 1/2" = 1 FOOT
RACK TO CLEAR CAP MOULDINGS OF BLACKBOARD
AND TO PULL DOWN OVER BLACKBOARD

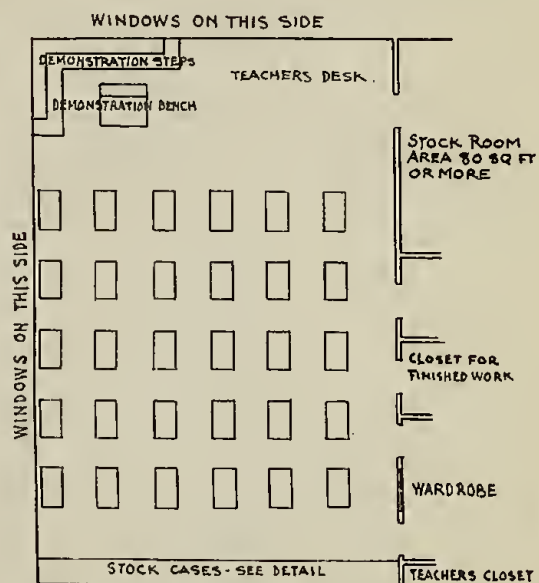


COOKING ROOM & FITTINGS

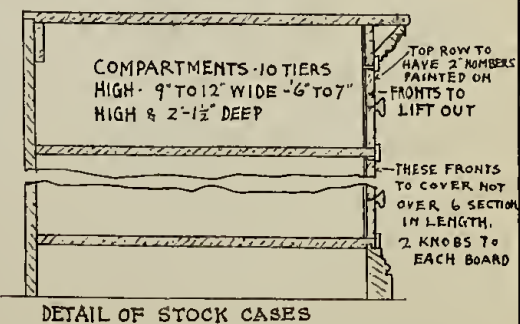


PLAN OF COOKING ROOM

MANUAL TRAINING ROOM

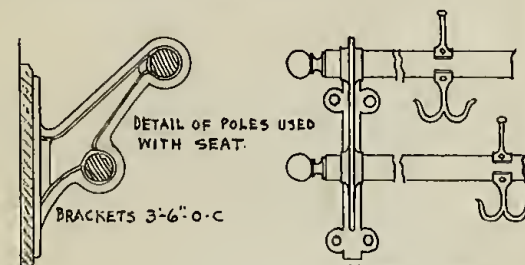


PLAN OF MANUAL TRAINING ROOM



DETAIL OF STOCK CASES

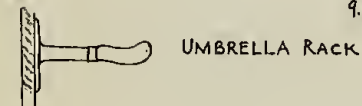
WARDROBE FITTINGS



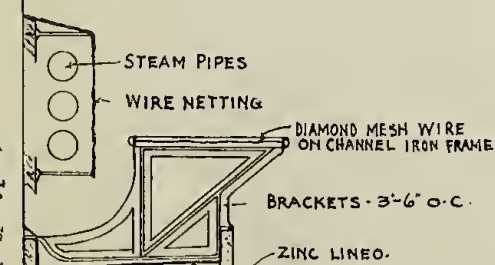
DETAIL OF POLES USED WITH SEAT.

BRACKETS 3'-6" O.C.

ELEVATION
9 HOOKS BETWEEN
BRACKETS



UMBRELLA RACK



STEAM PIPES

WIRE NETTING

DIAMOND MESH WIRE
ON CHANNEL IRON FRAME

BRACKETS 3'-6" O.C.

ZINC LINED.

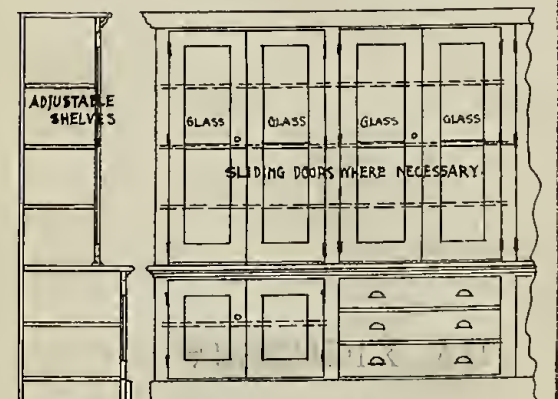


DETAIL OF CLOTHES HOOKS TO BE USED WHEN
ALL SIDES OF WARDROBES ARE UTILIZED.

COOKING ROOM FITTINGS



ALTERNATE PLANS OF COOKING BENCHES



SECTION.

ELEVATION OF DRESSER

96 COMPARTMENTS
3 1/2"-6" WIDE
12"-6 1/2" WIDE.

GLASS
SLIDING.



SECTION

ELEVATION OF RECIPE CASE

BOOK CASES

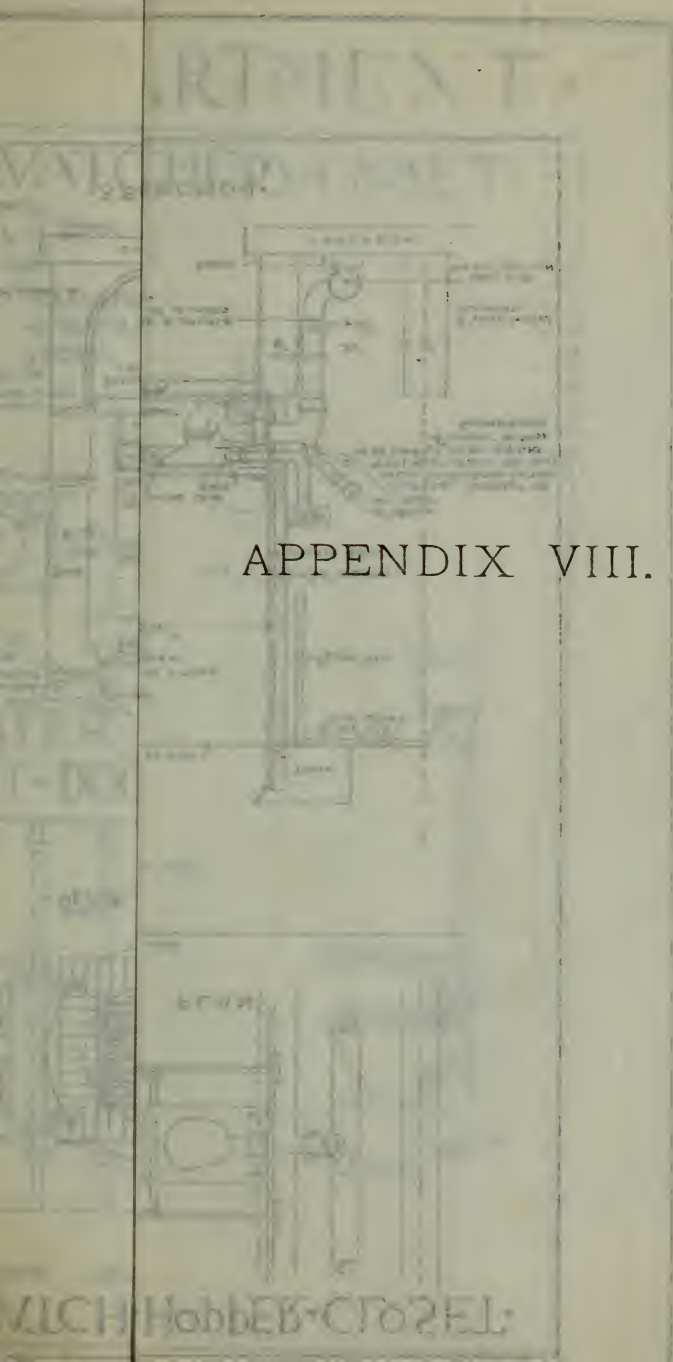


BOOK CASE FOR LIBRARY SCHOOL

TO FIT WITH CASE FOR BOOKS

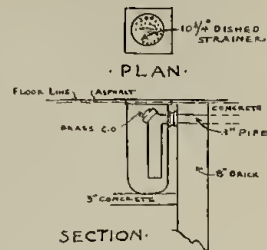


BOOK CASE FOR GRAMMAR SCHOOL

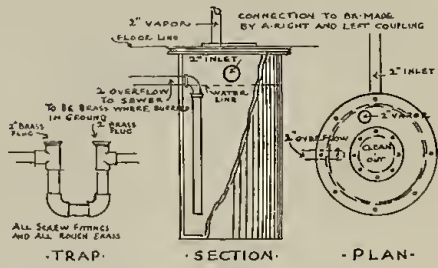


PLUMBING

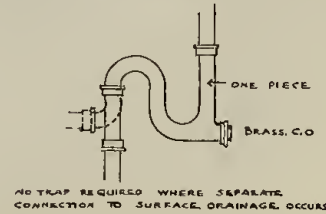
FLOOR WASH



BLOW OFF TANK

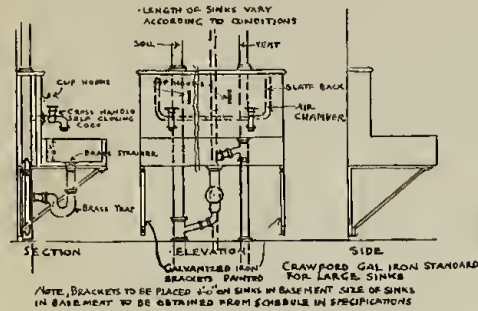


CONDUCTOR TRAP

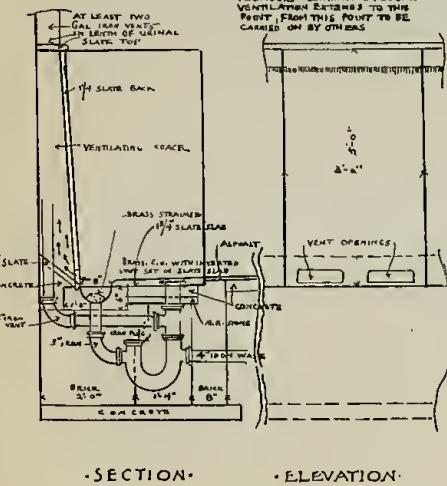


STANDARDS

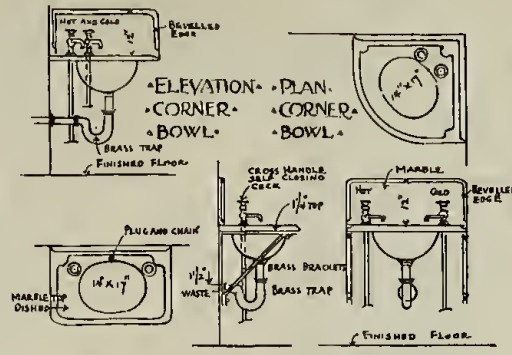
SLATE SINK



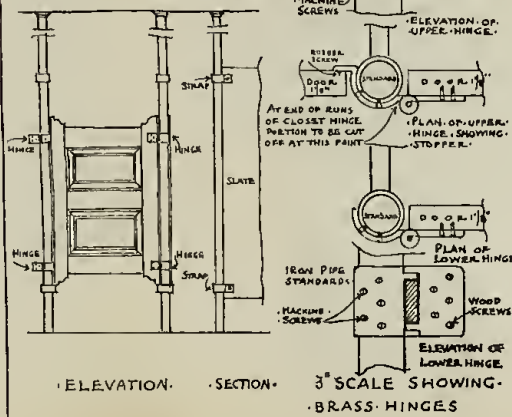
SLATE URINAL



LAVATORY BOWLS

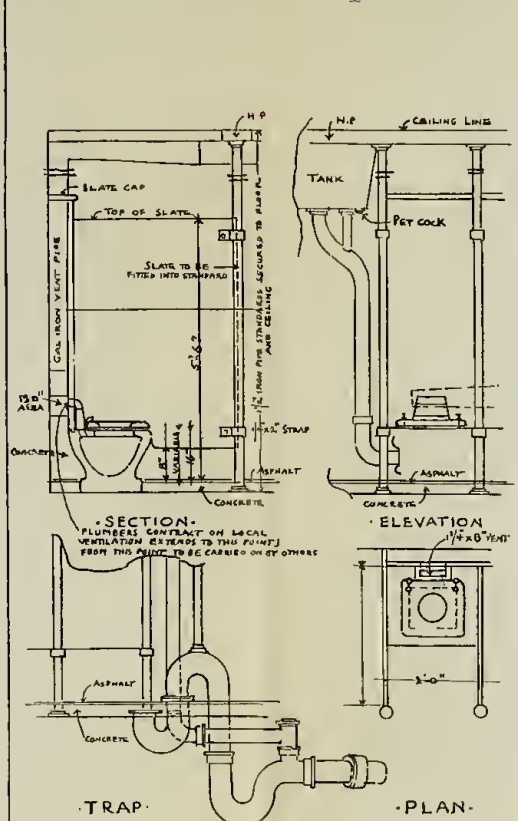


WATER CLOSET DOORS



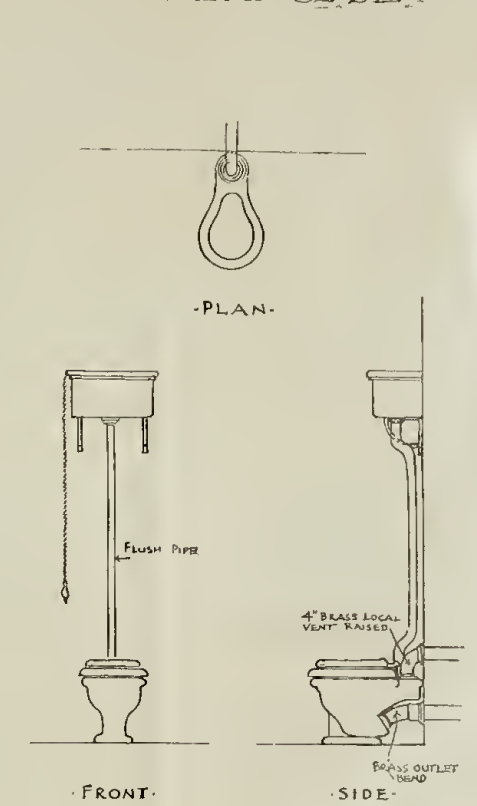
SCHOOLHOUSE

PORCELAIN LATRINES

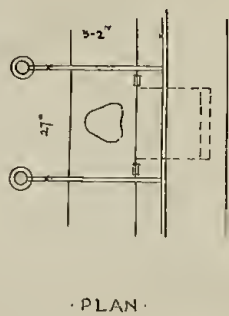


DEPARTMENT

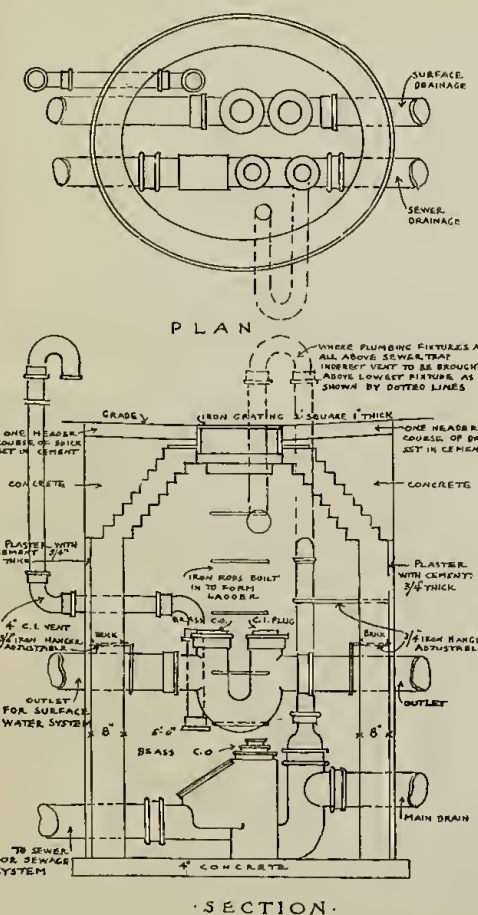
TEACHERS CLOSET



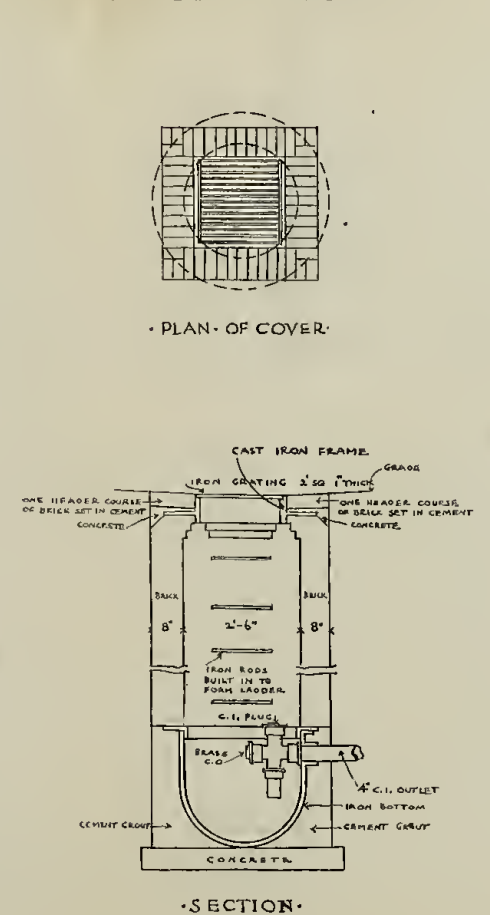
IRON LATRINE



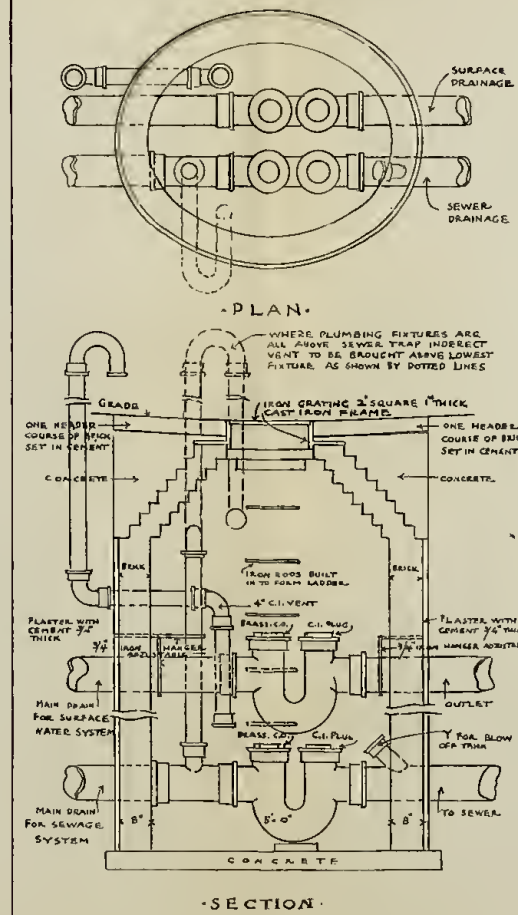
TIDE TRAP



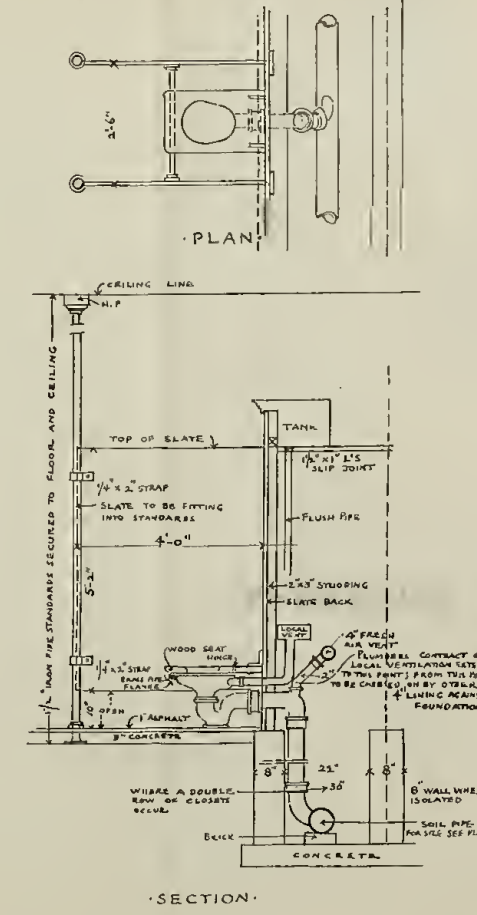
CATCH BASIN



RUNNING TRAP



SHORT HOPPER CLOSET



No detailed description of the sanitation installed is given this year, as in Appendix II. of last year's report, for the standards there referred to have been followed and no essential change made, but a sheet of drawings is given in Appendix IX. showing the standard fixtures.

(3.) FIRE-ESCAPES AND FIRE PROTECTION.

In the matter of fire-escapes the Board feels that it has by no means done all that might have been expected. On the other hand, to any one who has studied carefully the circumstances, an iron stairway, always steep, of many runs, enclosed with rail and netting, seems a poor chance of safety for a possibly frightened crowd of children. To partially fireproof the basement, at least about the heating apparatus, to fire-stop such openings as might conduct fire or smoke from the furnace-room to the floors above, to have a complete equipment for alarm, and an equipment for the ready control of any fire, would seem to the Board a more practical safeguard than the erection of fire-escapes.

Fire-escapes, however, have been erected or contracted for in the following buildings:

| | |
|--|---------------------------|
| Baldwin School | \$1,760 00 |
| Bartlett-street School | 927 00 |
| Bunker Hill Grammar School } | 3,957 00 |
| Bunker Hill Primary School } | |
| Brimmer School | 140 00 |
| Comins School | 2,387 00 |
| Drake School | 1,294 00 |
| George-street School | 1,281 00 |
| Girls' High School | 1,527 00 |
| Everett School | 2,870 00 |
| Mather School | 2,204 00 |
| Mayhew School | 1,060 00 |
| Old Roxbury High School | 1,520 00 |
| Phillips-street School | 1,173 00 |
| Skinner School | 1,544 00 |
| Tyler-street School | 900 00 |
| Wells School | 2,397 00 |
| West Concord-street School | 1,962 00 |
| <hr/> | |
| Total | <u><u>\$27,903 00</u></u> |

III.

REPAIRS.

Under the appropriation of 25 cents per \$1,000 for repairs, \$287,133 was available for 1903. The Board has continued the policy of repairing the exteriors, roofs, and walls, and has then proceeded with the work of cleaning and painting inside. The larger part of this work, being impossible in term time, was carefully laid out beforehand and then executed in the summer. Besides the more important repair work, the usual monthly repairs have been executed. To handle this mass of work more efficiently the Board has re-divided the districts and has added an inspector. Even as it is, it is extremely difficult to be sure that the minor repairs are really necessary, that the prices submitted are reasonable, and that the work, where executed, is properly done. In all renewals or larger repairs the Commissioners give their personal attention to the requirements, the estimates, and the final inspection and passing on the work. The smaller repairs are left to the inspectors, who are doing admirable service.

By a closer relation with the Schoolhouse Custodian, the Board hope to arrange so that janitors shall have such tools and materials as are necessary for petty repairs, and in this way save not only the expense, but the time of masters, inspectors, and the Board and its Secretary in attending to the routine which is necessary when a requisition for repairs is made out. In view of the work still to be done on the old schools, and the rapidly increasing number of new and very large schools requiring yearly repairs for good maintenance, the full amount of the appropriation for repairs is asked for the coming year.

It is further to be borne in mind that the increased use of the schools in evening and educational centres means not only large drafts on repair money to equip old buildings for this work, but also greatly increases wear and tear and makes a steady addition to the amount needed for repairs.

In Appendix III. can be found a statement showing how the repairs were distributed in the various schools.

IV.

POLICY OF THE BOARD.

The Commissioners wish to emphasize again the statement made last year (page 23) that, however much they are in sympathy with the more extended use of the schools, they cannot legally use the money borrowed for the purpose of providing accommodations for educating children for other educational or for social purposes. The evening school is an accepted factor in education. The Board provides all new buildings with adequate light for evening work, and equips in the same way such older buildings as are required for evening use, thus adding materially each year to the cost of repairs. As far as possible the basements of new schools are kept free, not only to serve as play-rooms for the children, but also to serve the educational centres. Beyond this the Commissioners are not justified in going; certainly not until the children of school age have been given adequate opportunities for schooling.

The Board takes the same ground in regard to baths and gymnasia as was stated last year. All plans prepared during this year have conformed to this general policy, and the careful study of the architects has given us a series of buildings, individual, and yet all conforming to the general limitations. With the help of the architects, the Board has made considerable progress in establishing a standard specification for the general contract and for plumbing. The domestic engineering, being always in the same hands, is made in a fixed form. The standardizing of the plans and specifications has worked towards uniformity in price. The sets of drawings now required from the architects are very complete and perfect. As will be seen, for the form of agreement given below, the Board receive, when the work is complete, a correct set of plans to file. This agreement was an attempt to put into definite form the relations existing between the architects and the Board and to define their duties and responsibilities. The Corporation Counsel, who drew up the form, suggested that it be a regular contract, approved by the Mayor, rather than a mere agreement between the Board and an architect, and on that account added a bond necessary to make it legal. Some of the architects have, for various causes, objected to the bond, and as the Commissioners' chief desire was to have a definite agreement, none of the contracts have been actually presented for the signature of your Honor; but all the architects appointed in 1903 are working under its terms. The

following is the original draft of the agreement, as modified by the Corporation Counsel, to omit the bond :

ARCHITECTS' SERVICES.

Every Architect employed by the Schoolhouse Commissioners of the City of Boston as the Architect for erecting a building is to perform the duties hereinafter provided.

First.—The Board is to furnish the Architect with the requirements and information for the design and construction of the building for which he is the Architect, and give the approximate cubical contents and proposed cost per cubic foot thereof; and is to employ engineers, and cause them to—examine the sketch plans and elevations made by the Architect as hereinafter provided, when they appear to the Board to be satisfactory—make the necessary working drawings and specifications for, and have the direction of, the heating, ventilating, and electric work for the building, said work being hereinafter designated as the domestic engineering—give the grades and lines of streets and adjoining lots—make all borings necessary to determine the quality of the foundations, and on request of the Architect or of any person doing work on the building furnish him full information relating to the above, the sewer, water, and gas service, and to the rights, restrictions, and boundaries of the lot on which the building is to be constructed.

Second.—The Architect is to consult and advise with the Board and make the investigations, sketch plans and elevations of the building necessary for a complete study of the design and construction thereof, and when the Board shall consent—is to furnish on tracing-cloth, to the Board, one complete set of working drawings, floor and framing plans, sections and elevations at one-eighth scale, such detail drawings on a larger scale as are necessary to explain the specifications, and a perspective drawing suitable for reproduction, and correct the working drawings on the completion of the work to agree with all changes made during construction—is to furnish, revise, and correct for the printer, one complete set of specifications for everything to be furnished or done in constructing the building, except for the domestic engineering—is to re-study and, if necessary, re-draw said drawings, plans, elevations, and specifications, if owing to extravagance therein, excess of cubical contents, or undue elaborateness of design, the lowest bid for doing the work in accordance therewith overruns the amount of said proposed cost—is to have the general supervision of the domestic engineering, and be the Architect of all other work to be done under any written contract for the construction of the building, and render the full usual architect's services and superintendence for such other work—is to loan to the Board to make blue prints from, one complete set on tracing-cloth of the working drawings, floor and framing plans,

sections and elevations, at one-eighth scale, and such detail drawings at a larger scale as are necessary to explain the specifications, is also to deliver to the Board two complete sets mounted on cloth of blue prints made from said tracing-cloth set, and is to deliver to the Building Department one complete set of blue prints made from said tracing-cloth set—is, in the form prescribed by the Board, to make all estimates and allowances for payments under any contract in which he is made the Architect of the work, and such estimates for the domestic engineering are to be accompanied by the certificates of said Engineers to their accuracy—is to advise with the Board on any changes in the building contemplated by the Board, and—is to order changes when required by the Board so to do—is to cause the drawings, plans, elevations, and specifications furnished by him to conform to all regulations of law and public authorities, and to be in accordance with established methods of building construction, faithfully carry out all the foregoing provisions, use all proper knowledge, skill, and care therein, and be accountable for any failure so to do.

Third.—The City, as full payment for the Architect faithfully furnishing and doing everything required of him as aforesaid, is to pay two and one-half ($2\frac{1}{2}$) per cent. of all amounts paid for the materials and labor for the domestic engineering, and 5 per cent. of all amounts paid for the other materials and labor furnished under any written contract for the construction of the building, the payment to be made as follows: Two and one-half ($2\frac{1}{2}$) per cent. of such part of the contract sum of any such contract as is not to be paid for the domestic engineering, is to be paid on the signing of the contract, and thereafter two and one-half ($2\frac{1}{2}$) per cent. of the value of the materials and labor as specified in each estimate for payment under the contract, is to be paid on the making of the estimate, until the full payment aforesaid is made, and if any thereof remains unpaid at the completion of the work it is then to be paid, and, if no contract is made as aforesaid within a reasonable time after the work hereinafter required to be performed by him prior to the making of a contract, or if he shall at any time be notified by the Board to discontinue all work relating to the building, he is to be paid a reasonable amount for what he shall have done.

The Board has continued its policy of employing engineers for the heating and electric work. A series of tests of plants recently constructed in old and new buildings has been conducted by Professor Kinealy. Two gravity systems, one in an old building and one in a new, and two fan systems, one in an old and one in a new building, were compared under ordinary circumstances. Another year further tests may be taken under the best circumstances, and the commissioners hope to be able to reach some definite conclusions therefrom in the comparison of gravity and fan systems.

V.

GENERAL DEDUCTIONS.

Last year the Board, in addition to the general suggestions as to the character of buildings (pp. 24-25, first annual report), also recommended that only space necessary for non-conducting purposes should be enclosed between the ceiling and the roof. In some cases it is found that this had been carried to an extreme and that we have been cramped for room to gather the vent-ducts together. It would seem as if occasionally a roof of low pitch were really more serviceable and nearly as economical. To keep the schools technically "first class" the pitched roof must be fireproof frame. With a pitch roof, outside gutters point to the use of outside conductors instead of conductors of cast iron in slots inside, and in this case the Board suggests gutters hung free of the eaves.

The standard size of rooms has been modified to make the primary 24 by 30 feet; and, the size of desks having been now definitely fixed, the Board is able to give certain dimensions which, in case of necessity, may be used in place of the standard grammar 26 by 32 feet.

The box desks of Grades I. to and including VI. are 12 by 18 inches and 15 by 21 inches. The lid desks for Grades VII., VIII., and IX. are 16 by 23 inches. The chairs, on which the Board were last year experimenting, have been put in a definite form; the steps taken in this study and the drawings of the chair are given in Dr. Cotton's report (Appendix VI). All desks are adjustable for height, but the adjustment of the lid was not considered necessary. The chairs are adjustable for height of seat and height of back-rest, and one row in each room has also the plus-and-minus adjustment. With the dimensions of the desk and chair thus fixed, it was a simple matter to lay out the maximum distance from back to back required in the upper grades, *i.e.*, for the largest children, fix a necessary width of aisles, and space in front and back of desks, and thus arrive at a minimum size which would seat fifty. These dimensions are 26 by 30 feet and 24 by 32 feet. These dimensions are permitted only in exceptional cases when we are pressed for space.

Last year it was found that a good plan would show an area on one floor not exceeding double the area of the classrooms on that floor. But buildings whose plans answer these requirements showed wholly different amounts of cubic feet

for the accommodations afforded. In the table given last year (p. 52) it will be noted that the East Boston High School figured 23.26 cents per cubic foot, the Dorchester High School but 16.33 cents, the Bigelow School 21.11, and the Roger Wolcott School 18.49. Similar discrepancies can be seen in the longer table published in the report of the City Architect of 1894. It was evident that the cubic contents bore no fixed ratio to the accommodation, and the Board found, by comparing a series of typical examples, that the primary building of twelve rooms or more, having neither assembly hall nor technical rooms, should never exceed 35,000 cubic feet per class-room, and should generally be nearer 30,000 cubic feet; that a grammar building, having assembly hall and cooking and manual training rooms, should generally figure at 40,000 cubic feet per class-room, the technical rooms not being counted, and should never exceed 45,000 cubic feet. Taking the average cost per cubic foot at 22 to 23 cents, there can now be determined at the outset a reasonable cost for a building, to which might be added a special allowance for exceptional expenses, as blasting, piling, or an unusually irregular plan.

It will be seen that nearly all the buildings under contract last year exceeded their proper limit of cubic contents, thus indicating waste space which should not exist. The general information for construction of school buildings given last year (pp. 29-36) has been modified and amplified as follows:

GENERAL INFORMATION FOR "FIRST-CLASS"
CONSTRUCTION.

SCHOOL-ROOMS. (1.) *Size* will be 24 by 30 Primary, and 26 by 32 Grammar, and not less than 13 feet in clear, modification allowable.

(2.) *Windows* will be on the long side, for left-hand lighting; they will contain not less than $\frac{1}{3}$ of floor area, about 160 feet for a room 24 feet wide; neither double run of sash nor double glazing will be required, except in cases of unusual exposure, but a dust-proof weather strip; the head square and close to the ceiling, the sill about 2 feet 6 inches from floor. Finish with plastered jamb, no architrave, metal corner bead.

(3.) *Doors*.—One to corridor, 3 feet 6 inches by 7 feet, partly glazed, to open out, placed preferably near the teacher's end; bronzed steel butts, lock, brass knobs, marble thresholds to fire-proof corridors, none where both floors are of wood.

(4.) *Floors* will be Georgia pine rift or maple.

(5.) *Walls* will be painted burlap up to chalk rail level (window stool), and above this plaster, tinted in water color; the blackboards 4 feet high, 2 feet 2 inches from floor in Kindergarten and Primary, and 2 feet 8 inches in Grammar; behind the teacher and on one long side in Primary, and behind the teacher on long side and end in Grammar and High. These will be of the best black slate $\frac{3}{8}$ inch thick. In some Primaries a rack for holding cards is desired above the blackboard.

(6.) *Ceiling* will be level, plaster, no paint nor tint.

(7.) *Lights*.—Six groups of four lamps each and light for teacher's desk, electric; no gas.

(8.) *Heating and Ventilation*.—The inlet for heat about 5 square feet, the outlet for ventilation about 5 square feet for gravity system and 3 square feet for fan.

(9.) *Bookcase*.—Provide a bookcase in any convenient position, capable of containing 300 octavo volumes. (See drawing.)

(10.) *Map Supports*.—Provide one map support. (See drawing.)

(11.) *Teacher's Closet*.—Provide a small closet for teacher's coat and hat, preferably opening from the class-room, but allowable from the wardrobe.

WARDROBES.

(1.) *Size*.—Wardrobes will adjoin school-rooms, and be from 4 feet 6 inches to 5 feet 6 inches wide.

(2 and 3.) *Windows and Doors*.—Outside light; two partly glazed doors, both connecting with school-room and not to corridor. Doors, double swung, 2 feet 6 inches wide, brass double-acting butts, foot and hand plates, hooks to hold open, ventilation under door. (See later.)

(4.) *Floors* as in school-room.

(5.) *Walls*.—Burlap up to hook-rail; pole on brass brackets with hooks under and pins over, or a double pole with hooks. Shoe and umbrella rack below. (See drawing.) Finish above, plaster tinted.

(6.) *Ceiling*.—Plaster. No tint.

(7.) *Light*.—One lamp. Ceiling outlets, electric.

(8.) *Heating and Ventilation*.—Heating direct; ventilation direct, $1\frac{1}{2}$ square feet area cross section.

CORRIDORS AND
VESTIBULES.

(1.) *Size.* — Not less than 8 feet wide for four rooms on a floor, not less than 10 feet for over four rooms, governed by length, access to stairs, etc.

(2.) *Windows.* — Outside light essential.

(3.) *Doors.* — Outer doors to open out, heavy butts, standard school lock, door-check, heavy hooks to hold open. Vestibule doors open out, heavy butts, pulls, push-plates, hook to hold open, door-checks, no locks.

(4.) *Floors.* — Tile, terrazzo, concrete, or asphalt floors.

(5 and 6.) *Walls and Ceilings.* — Painted burlap, 7 feet high, untinted walls and ceilings. Finish burlap with painted line.

(7.) *Light.* — Ceiling lights, two lamps each, electric, also gas for emergency on stairs and in vestibules.

(8.) *Heat and Ventilation.* — Heat direct. Ventilation, none.

(9.) *Sinks and Closets.* — On each floor above the first, one or two four-foot sinks and emergency closets, one for boys and one for girls.

STAIRCASES.

(1.) *Number and Arrangement.* — Determined by building laws, but fireproof construction in all cases.

(2.) *Material.* — The treads, North River stone or asphalt, or concrete construction with granolithic surface. Rails of simple pattern easily cleaned; centre rail for stairs over 5 feet wide.

(3.) *Steps.* — About $6\frac{1}{2}$ by 10 in primaries, and about 7 by $10\frac{1}{2}$ in grammar and high schools. Rail, not less than 2 feet 8 inches on runs, and 3 feet on landings.

SANITARIES.

(1.) *Size.* — General toilet-rooms in basement, in size approximating space for three water-closets for each school-room, two girls', one boys', and 36 inches of urinal for every school-room, arranged for convenient supervision and circulation. Slate sinks, 12 inches in length, for each school-room, located preferably in the play-rooms. In large schools the number of closets may be considerably reduced, especially on boys' side.

(2.) *Windows.* — Ample outside light.

(3.) *Doors.* — The doors arranged "in" and "out," with spring to door-check and stout brass hooks to hold open; glazed; half doors to water-closets, except where ordered omitted.

(4.) *Floors.* — Asphalt; boys' drained to urinal, girls' to floor-wash.

(5.) *Walls*.—Salt-glazed, semi-glazed, or other non-porous inexpensive surface, 7 feet high; above, brick painted.

(6.) *Ceiling*.—Untinted plaster.

(7.) *Light*.—Ceiling lights in groups of three lamps.

(8.) *Heat and Ventilation*.—Heat direct. Ventilation through fixtures back of urinals and 13 square inches local vent in water-closets.

MASTER'S AND
TEACHERS'
ROOMS.

(1.) In each grammar school a room of about 240 square feet for the master, with a water-closet and bowl and coat-closet adjoining; and a room for teachers averaging about 300 square feet for ten teachers, with one water-closet and bowl for each ten.

(2.) Where men as well as women are teachers, a separate small room with toilet accommodations for men.

PLAY-ROOMS.

(1.) All free basement space to be arranged as separate play-rooms for boys and girls. Painted or whitewashed brick or stone walls, asphalt floors, plaster ceilings, not necessarily level.

PLUMBING
FIXTURES.

(1.) *Water-closets*.—The basement water-closets for primary and grammar schools are syphon or wash-out, vitreous earthenware, or enamel iron latrines, or short-hopper closets; elsewhere a heavy wash-down closet.

(2.) *Slate Partitions*.—Supported at ends with iron pipe from floor to ceiling. (See drawing.)

(3.) *Urinals*.—The urinals will be of slate, floor slab and trough and back, without partitions, flushed automatically, through $\frac{7}{8}$ -inch perforated pipe, with hot and cold water; vented at bottom into space behind. (See drawing.)

(4.) *Sinks* of black slate, self-closing cocks, set 15 inches o. c., and cups and cup hooks.

(5.) *Piping*.—(a.) Cast-iron, must be in trenches in basement, running trap with direct-indirect fresh air inlets, clean-outs at every change of direction. Soils and vents exposed as far as possible, no asphaltum, but oil-tested red lead and three coats paint.

(b.) *Supplies*.—Exposed as far as possible; where covered may be lead, elsewhere brass, no nickel plate. Hot water for janitor's use in basement, for urinal, cooking-room, and, if convenient, for master's and teachers' toilets. Supply from boiler and from summer boiler, if

any, or from a gas heater, or from cooking-room range.

(6.) *Fire Lines.* — In second-class buildings and in first-class buildings over 3 stories high, one or more lines of 3-inch pipe.

SPECIAL ROOMS.

ASSEMBLY
HALLS.

(1.) Assembly halls should accommodate the whole number of pupils in smaller grammar buildings, but it is not customary in the larger schools to seat over 600 or 700. The platform should be capable of accommodating one, or, in the large schools, two classes, and should have removable stepped platforms of wood to take the benches. Galleries may be used where the hall is two stories in height. Ante-rooms near the platform are desirable, and a connection from adjoining class-rooms to the ante-rooms or directly to the platform. A dignified architectural treatment of the walls and a studied color scheme is expected. The hall floor will generally be level. The lighting and acoustics should be such as belong to a small lecture hall.

MANUAL-TRAIN-
ING ROOMS.

(1.) *Size.* — Room should be approximately of dimension arrangements shown by drawings, for number of benches there given.

(2.) *Light.* — The windows should be as near full length as possible and on two adjacent sides. Artificial light should be provided in six groups of four lamps as in class-rooms.

(3.) *Heat.* — Heat and ventilation the same as in class-rooms.

(4.) *Stock-room.* — Stock-room should contain at least 80 square feet, preferably long and narrow. Two 18-inch shelves should run around the room, 5 feet 6 inches and 6 feet from the floor.

(5.) *Wardrobe.* — Wall space for 30 hooks.

(6.) *Teachers' Closet.* — Teachers' closet should be large enough to be used also for storage of finished work, and should be fitted with all shelving possible as well as with the customary coat hooks. An area of 40 square feet is adequate.

(7.) *Bookcases.* — Like those in class-rooms.

(8.) *Blackboards.* — Blackboard space of about 30 running feet 4 feet high.

(9.) *Work-rack.* — About 28 feet long, 6 feet 6 inches high and 2 feet deep.

(10.) *Wash-bowl.*—A 3-foot sink is a convenience, but not a necessity.

(11.) *Finish of Room.*—A basement room should be finished as a shop, simple sheathed or whitewashed walls; if above the basement, as a class-room.

(12.) *Furniture.*—(Not to be included in the contract.) The furniture comprises twenty-six to thirty benches and stools, four display frames, about 6 feet long and 30 inches wide, demonstration steps and guard rail, teacher's desk, table 4 feet by $2\frac{1}{2}$ feet with unfinished top, one desk chair and two common chairs. (For all of these see drawings.)

COOKING-
ROOM.

(1.) *Size.*—Should have an area of class-room size or more, if available.

(2.) *Light.*—As much light as a class-room, but not necessarily left hand; if located in a corner, light from two sides. Artificial light as in a class-room.

(3.) *Heat.*—Less heat is required than in a class-room, but the ventilation should be the same, with additional vent from the demonstration ranges.

(4.) *Wardrobes.*—Provision for 24 pupils, clothes hooks in separate lighted closet, and small teacher's closet.

(5.) *Interior Finish.*—Above basement, similar to school-rooms, blackboards 4 by 10 feet back of teacher's desk. Walls and ceilings painted in oils. A basement room may have painted brick walls.

(6.) *Tile.*—The floor space occupied by the ranges and the wall space back of them (include sides if in recess), to a height of 6 feet, 6-inch unglazed red tile. (For all this see drawings.)

(7.) *Fittings.*—(a.) Work benches, accommodating 24 pupils, fitted with compartment for utensils, breadboard, etc.; with gas stoves, set on brass plates; benches arranged in the form of an ellipse, if convenient, with access to centre from two sides; top of pine 26 inches wide; open underneath and supported on pipe standards. One section detached and fitted as a demonstration bench; a clear space of four feet all around. Dining table (furnished under another contract) is to be set in centre of ellipse, or other space if available.

(b.) *Dresser.*—Ten feet long, in 3 sections, 4 adjustable shelves and glazed sliding, or hinged,

doors at top; one set of 3 drawers and 2 cupboards on lower part.

(c.) *Fuel Box*. — In 2 compartments, each about 24 inches square and 30 inches deep, with hinged lids; small shelf in one section.

(d.) *Bookcase*. — Similar to those provided in class-rooms.

(e.) *Sink*. — 5 feet long; 2 cold and 2 hot water cocks; drip shelves 24 inches long at each end of sink. Sinks should be near ranges.

(f.) *Hot-water Boiler*. — (See instructions in plumbing.)

(g.) *Coal and Gas Ranges*. — Allow the sum of \$150 for the purchase of; contractor to make all connections.

(h.) *Refrigerator*. — Will be a part of the furniture.

KINDERGARTEN.

Kindergarten. — Placed on first floor, preferably a corner room with a south or southeast exposure, and of a size to take a circle 16 feet in diameter with 4 feet outside; and an adjoining room with an area of about 200 square feet, connected. If a corner class-room is used, light from two sides; the smaller room should be well lighted. The other general arrangements and fittings of rooms should be similar to the class-room, except that a tackboard covered with burlap at top of blackboard should be provided. Two ordinary bookcases or one large one should be provided in class-room. A store closet with 12-inch shelves should be provided for kindergarten supplies, and a closet sufficiently large for the clothing of three teachers should be provided; the wardrobe should be similar to those of class-rooms, with accommodation for sixty hooks. It would be convenient, but not essential, to provide a water-closet and a slate sink adjoining kindergarten. On the floor of main kindergarten regulation circles and lines for kindergarten games should be painted in parti-colors. (See standard plan.)

HEATING, VENTILATION, ELECTRIC SYSTEMS.

HEATING AND

VENTILATION

GRAVITY SYSTEM.

(1.) *Heat-ducts for School-rooms*. — (a.) Size. Allow about one square foot area cross section for each nine occupants.

(b.) Location in corner room to be within 10 feet of outside wall.

(c.) Location in room with one outside wall to be on inside wall near middle.

(*d.*) Bottom of opening to be about eight feet above floor.

(*e.*) Opening to be same area as duct.

(*f.*) No guard will be put in.

(*g.*) The opening will be finished inside like adjoining wall.

(2.) *Vent-ducts for School-rooms.* — (*a.*) Size. Allow about one square foot area cross section for each ten occupants.

(*b.*) Location in corner room at inside corner of room, and where possible on same wall as heat-duct.

(*c.*) Location in room with one outside wall to be on inside wall near middle.

(*d.*) The opening will be full size of vent-duct.

(*e.*) The floor will be carried into the bottom of duct and baseboard carried in around. The inside of duct to be finished to match adjoining wall.

(*f.*) No guard will be put in.

FAN SYSTEM.

(1.) *Heat-ducts for School-rooms.* — (*a.*) Size. Allow about one square foot area cross section for each fourteen occupants.

(*b.*) Location in corner room to be within 10 feet of outside wall.

(*c.*) Location in room with one outside wall to be on inside wall near middle.

(*d.*) Bottom of opening to be about 8 feet above floor.

(*e.*) Opening to be one-third larger than area of duct.

(*f.*) No guard will be put in.

(*g.*) The opening will be finished inside like the adjoining wall.

EXHAUST FAN SYSTEM.

(1.) *Vent-ducts for School-rooms.* — (*a.*) Size. Allow about one square foot cross section for each 16 occupants.

(*b.*) Location in corner rooms at inside of room, and where possible on same walls as heat-duct.

(*c.*) Location in rooms with one outside wall, on inside wall near middle.

(*d.*) The opening will be full size of vent-duct.

(*e.*) The floor will be carried into the bottom of duct and baseboard carried in around. The inside of duct will be finished to match adjoining wall.

(*f.*) No guard will be put in.

**TOILET-
ROOMS
VENT.**

(1.) Each doorway into toilet-rooms is to have an opening either through lower panels with register face or underneath the door, equal in net area to the size of vent-duct from room.

(2.) Size of vent-duct from toilets to be equal to 12 inches for each closet, and each 16 inches of urinal space.

**WARDROBE
VENTS.**

(1.) Each room to have a vent-duct $1\frac{2}{3}$ feet area cross section, with top and bottom registers.

(2.) The doorway into rooms at end farthest from vent-duct is to have free opening from school-rooms provided as for toilet-rooms, so that air can pass from school-room through wardrobe and out vent-duct.

**ELECTRIC
WORK.**

(1.) *Service.*—(a.) This should enter basement underground at location to be determined by reference to Edison mains and building arrangements.

(b.) Main switch, cut-outs and metre should be located as close to service as possible and placed in a cabinet.

(2.) *Conduits.*—(a.) All wires to be run in an iron conduit concealed, except conduits for mains in basement.

(b.) Tap circuit conduits to be run in a space of 2 inches below floor beams and above wire lathing wherever concrete construction is used. With terra-cotta construction conduits to be laid on top of blocking in cinder filling.

(3.) *Wire Slot.*—(a.) Near each end of a large building, or near the centre of a small one, either an open shaft at least 24 inches by 30 inches, or a slot in wall 4 inches deep and 18 inches wide, should be provided from a point 4 feet below basement ceiling to a point above ceiling of top floor.

(4.) *Cabinets.*—All cabinets to be furnished by wiring contractor, but finished by the general contractor.

(5.) *Cutting.*—All cutting and patching to be done by the general contractor.

(6.) *Outlets.*—(a.) Class-rooms to be provided with 6 four-light ceiling outlets, controlled by three switches, and one light for teacher.

(b.) Wardrobes to have one two-light ceiling outlet, controlled by switch in class-room.

(c.) Corridors to be lighted from ceiling wherever possible.

(d.) Height of side outlets in rooms to be 6 feet, and in corridors 6 feet 4 inches. Switch outlets to be 4 feet.

(e.) Switches in corridors, play-rooms, and pupils' toilet-rooms to be operated by private key.

(7.) *Fixtures*.—Fixtures in class-rooms to be of special design, to combine a direct and diffused light.

(8.) *Gas*.—Gas outlets to be provided in all corridors, vestibules, stairways, and boiler-room; all except vestibule to be wall outlets. Gas-piping to be included in Architect's work and fixture in Engineers'.

(9.) *Stereopticon*.—All grammar halls and high schools to be provided with an electric stereopticon.

(10.) *Clocks and Bells*.—(a.) All schools to be provided with a system of clocks, operated by a master clock.

(b.) All primary schools to be provided with a system of signal bells, operated by push-button.

(c.) In all grammar and high schools the bell system to be operated automatically by master clock, according to prearranged programme.

(11.) *Telephones*.—In all schools, each class-room, hall, teachers' room, and boiler-room, to be connected to master's office, or to room occupied by the first assistant, by a telephone system.

(12.) *Auxiliary Fire-alarm*.—At one or more points in each floor there are to be located push buttons connected with an auxiliary fire-alarm box, which is a part of the city fire-alarm system.

NOTE.—Drawings showing special fittings for both plumbing and interior fittings will be found in appendices VII. and VIII.

VI.

FINANCIAL STATEMENT.

A complete statement of all expenditures in connection with the schools will be found in the report of the Auditor and a brief statement of expenditures from the appropriation for Land and Buildings for Schools and for Repairs is given in Appendices II. and III. It is evident that, even if the full appropriation available under the Act is granted in 1904, the Board will be unable to complete the list of forty-two items. This is due to the increase in the amount of accommodation required by the instructions of the School Committee in nearly all the items from the amount contemplated by this Board when the list was drawn in 1901, thus increasing

the cost of the land and of the building; and also due to the large amount spent for portable buildings erected to care temporarily for the children who are to be permanently housed in the new buildings. Technically, the Board might well have taken the stand that a building described by the School Committee with accommodations to meet the needs existing in 1903 or 1904 was not strictly the item for which the appropriation was made, but covered also the current growth in that district for a year or two, and was framed to meet the needs which would exist when the building was completed; but it seemed unwise and impolitic to insist on this literal interpretation, especially in view of the fact that the original items were in many cases not definite. Even if the list had been strictly adhered to, and the items made to agree with the intention of the Board in December, 1901, the mere fact that the Board has no control over the expenditures for land accounts for many large items which could not have been foreseen. The Board, being unable to make building agreements with owners, cannot fix a price when the taking is made, with the result that the Board of Street Commissioners are often forced to make an award not only far above assessed valuation, but also above prices informally given to this Board before the taking.

The Board, in a communication to the Committee on Schoolhouses, December 21, 1903, stated that in their judgment it would require, in addition to the full appropriation for 1904, \$1,934,300 to complete the list of forty-two items; and that there still remains much to be done to put the old buildings in proper repair as to matters of plumbing and heating, and much new work necessary to meet the yearly increase of population, none of which necessary work can be covered by the appropriation for repairs. Unless a yearly appropriation is made for current growth, it will be necessary to ask for authority for further loans if the children are to be given school accommodation.*

VII.

CONCLUSION.

The work accomplished during 1903 has in many respects fallen short of what should have been done, and in some ways the actual results have been unsatisfactory. Of the seven buildings begun last year, only three were occupied February 1, 1904. There were delays in completing drawings and delays in execution, and the buildings themselves cost more than the Board feel that they should. Of the

work begun this year, but four buildings are actually under contract, out of the twelve for which plans are being made. As yet the methods of the Board have not resulted in having work done quickly either by architects or contractors. With the reappointment of architects who have worked for the Board it is hoped that this may be remedied. With the difficulties of dealing with contractors, and forcing the prompt execution for contracts, your Honor is fully acquainted. It is certainly unsatisfactory to be unable to make a contract and insure its completion on time. In preparing to open a large school an uncertain date is a serious inconvenience. Advertising for bids, making a number of contracts instead of one, dealing with labor conditions, and facing problems of strikes, it is almost impossible to insure good workmanship and prompt completion, or even one of these desired results. On the other hand, the difficulties attending the selection of bidders are quite as serious, and the Board believes that the true course is to give all an opportunity to bid, but to protect the interests of the city by the employment of the most competent and experienced architects, by preparing very complete plans and specifications, and by enforcing rigidly the terms of the contract. A single contract makes the latter more feasible, and the Board respectfully urge on your Honor its general adoption for school work.

The work of sanitation has been carried forward steadily, and it is hoped that another two years will see all defective systems put in thorough order and repair. As it now stands, nearly every system that is really dangerous or apt to become so has already been taken care of, and the work remaining is chiefly replacing a system that is out of date by a more modern and efficient one.

The matter of fire exits has been carefully considered; the law regulating the staircases has, with the advice of the Fire Commissioner and Building Commissioner, been modified by the Legislature (chapter 301 of the Acts of 1903), so that the stairs in first-class buildings are no longer cut off by partitions and fire doors, thus leaving freer egress. The old buildings are being gradually put into safer condition. However much is done in a building of second-class construction, the chief reliance for protection must always lie in the care and watchfulness of the master, janitor, and the teachers.

The Board have endeavored to keep in touch with the School Committee, but they believe that the most effective service will be had by a more close relation with the Superintendent of Schools and the masters, whom the Board have

always found ready to help and advise, and fitted by their intimate knowledge of their work to advise wisely. The Board believe also in a close relation being maintained with the janitor service, as the erection and repair of buildings cannot be too closely connected with the service of maintenance and care.

No essential change has been made in the office force. The draughting room has been kept very busy, and especially during the summer has been worked overtime. Besides making all drawings for new sanitation, fire-escapes, and the major repairs, they have prepared standard plumbing details and details of inside finish, which are given in Appendices VII. and VIII. Work has also progressed on the dummy specifications, which, when completed, should tend to simplify and expedite the work of the architects, and also to insure against omission.

The experiments in artificial lighting have resulted in a form of lamp which seems highly satisfactory. The experiments in furniture have also resulted in a chair which seems to combine all the most important details and which involves no more expense than that previously used. The accumulation of old furniture is a serious matter, as it costs more to clean, repair, and fit with adjustable irons than it is worth. The Board hope that some means may be found of disposing of this old material so that it may be of some real service.

The heating tests now being conducted, and which the Board hope to continue, should demonstrate definitely if we are getting the result we have a right to expect from modern plants which are now being installed.

In closing, the Board wish to express their sense of obligation to the Corporation Counsel, who has always been ready with valuable advice and help. The agreement with the architects is perhaps the most definite result, but there have been many minor changes in the contract which are of benefit to the city.

The Board desire also to express to your Honor their sense of gratitude to you for your unfailing courtesy and your steadfast support of all that makes for the good of the city.

Respectfully submitted,

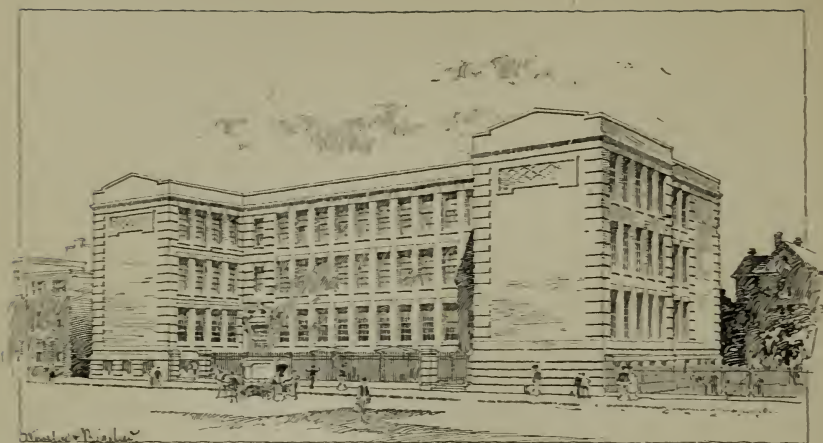
R. CLIPSTON STURGIS,

FREDERIC O. NORTH,

JOSEPH J. CORBETT,

Commissioners.

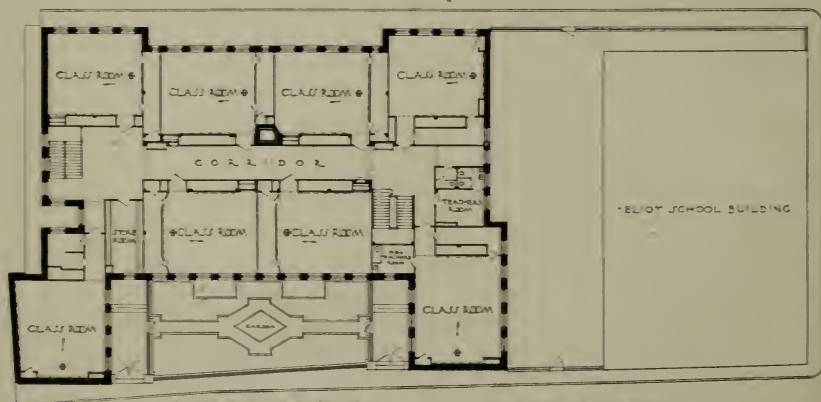
APPENDICES.



· PRIMARY SCHOOL · IN THE ·
· ELIOT · AND · HANCOCK · DISTRICT ·
· NORTH · BENNET · AND · TILESTON · STREETS ·

NOTES.

- INDICATES TEACHER'S DESK.
- ARROW INDICATES WAY PUPILS FACE.
- - - DOT AND DASH INDICATES BLACK BOARD.



SECOND FLOOR PLAN.

0 10 20 30 40 50 60 70 80 90 100
FEET
SCALE

· WINCHELL AND BIGELOW ·
· ARCHITECTS ·

APPENDIX I.

NOTES ON NEW BUILDINGS.

PRIMARY SCHOOLHOUSE, ELIOT AND HANCOCK DISTRICT.

The school-house occupies the old Ware School lot, and land adjacent bought for the purpose, and faces on North Bennet and Tileston streets. On the former, it commands the open space of the playground, and the building is therefore on the street line; on the latter, Tileston street being very narrow, the centre portion is recessed to insure light, and the wings do not depend on Tileston street for light. It was the best that could be done to furnish large accommodation on a small lot. The roof playground, being yet an experiment in Boston, was not tried here, but can readily be had later if desired. A small garden of evergreen things helps to cheer the Tileston street side.

The building is of brick, with terra-cotta floors and partitions, flat roof, first-class fireproof construction throughout.

The basement contains the sanitariums for boys and for girls (a small number from the six primary rooms) and the boys of the present Eliot School, the play-rooms and the heating apparatus.

There are eight rooms on the first story, eight on the second, and six rooms on the third floor, the space of the other two being at first to be utilized for manual-training rooms. Some of the class-rooms are below standard size, as in this neighborhood there are many foreigners whose children go into ungraded classes of thirty-five or forty at the outside, instead of fifty.

The area of the building on the first floor is 11,241 square feet, and twice the area of the class-rooms is 11,184 square feet. It is therefore just above the limit which shows a building economically planned. The cubical contents are 727,068 cubic feet, and the number of class-rooms being twenty-two, it averages 33,048.5 cubic feet per class-room. A better showing would be made if the manual-training rooms were taken as class-rooms. The cost of the building is \$172,213, or 23.69 cents per cubic foot.

Heating and Ventilation.—The boiler plant is so arranged that it will have sufficient capacity for furnishing heat to the present Eliot building on the same lot.

System: The system for steam is low pressure gravity return; system for air is gravity.

Boilers: There will be installed four horizontal steel tubular boilers of 60 horse-power each, arranged to be used together or separately.

Radiation: There will be a total of 12,283 square feet of heating surface in the new building, and in the old building about

7,000 square feet. This amount of radiation will be mostly indirect pin radiators, with some direct radiators in small rooms, corridors, etc.

Temperature Control: The temperature of the air in the school-rooms of both buildings will be controlled by means of hand-mixing dampers, to be operated by the teachers.

Electric Work. — The building is furnished throughout with electric light, electric program clocks, bells, and a system of telephones. There are 418 outlets, 835 lights, 25 clocks, 5 bells, and 27 telephones.

GRAMMAR SCHOOLHOUSE, MATHER DISTRICT, MEETING HOUSE HILL.

Meeting House Hill is perhaps the finest of all locations owned by the city for school purposes, but the Board feel that no advantage has been taken of the superb opportunity. The present Mather building occupies the crown of the hill, thus completely blocking the view. It seemed to the Commissioners that the present time was an opportunity to study the whole hill top with a view to future development, and the architects prepared a plan which contemplated eventually the removal of the present Mather building, the fire-engine house, and the release of Lyceum Hall, and placing a new group of buildings partially surrounding the hill top. From this open quadrangle the view to the east is unbroken, and the buildings form a fitting frame. The building is the largest of this future group, and occupies the north side of the hill. The slope brings the north and northeastern basement almost wholly above grade, so that four class-rooms could be planned in the eastern wing.

The building is of brick, flat roof, and is first-class fireproof construction throughout.

The basement contains four rooms, the boys' and girls' sanitariums and play-rooms and the heating apparatus. One of the class-rooms will be used for the present as a cooking-room. No manual-training room is included, as that is cared for in Lyceum Hall at present, and will, if the whole plan for the hill is eventually carried out, be located with the cooking-school in a separate building. Above the basement there are twenty-eight class-rooms and a hall occupying the central portion on the second and third floors.

The area of the building on the first floor is 19,829 square feet, and twice the area of the class-rooms is 19,968 square feet. It is therefore just over the limit. The cubical contents are 1,353,831 cubic feet, and counting the three basement class-rooms there are thirty rooms, averaging 45,127.7 cubic feet per room. The cost is \$285,179.60, or 21.06 cents per cubic foot.

Heating and Ventilation. — System: The system is a combination pump receiver and gravity return system; that is, during the hours when the school is in session the water will be returned to boilers by means of pump. At night, when the fires

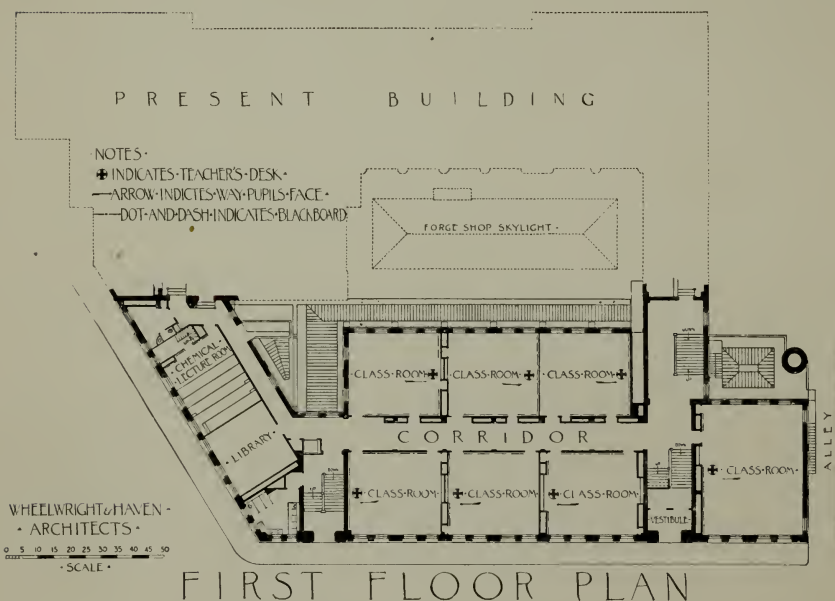


GRAMMAR - SCHOOLHOUSE -
-MATHER-DISTRICT -
-MEETING - HOUSE - HILL - BOSTON-MASS -





EXTENSION
MECHANIC ARTS HIGH SCHOOL
SCOTIA AND DALTON STREETS



are banked, the steam pressure will be dropped, and by means of by-pass valves the water can be returned directly to the boilers. For air, there is a 12-foot plenum fan, run by a steam engine at twenty-five pounds pressure. When this pressure is required for running the engine, steam for heating the building will be taken through reducing-pressure valve to the heating system so that about five pounds will be the maximum pressure on the heating system. The ventilation is stimulated by means of aspirating coils, heated by exhaust steam from the steam engine.

Boilers: There will be three 96-horse-power horizontal steel tubular boilers, 66 inches in diameter and 18 feet 4 inches long. In addition there will be one small steam boiler for heating water in hot-water tank when large boilers are not in use.

Radiation: There will be a total of 12,274 square feet of heating surface, comprising indirect radiators in main heating chamber, supplementary radiators and direct radiators placed throughout the building.

Engine: There will be installed one 18-inch by 12-inch low-pressure centre-crank engine.

Fan: There will be installed a 12-foot three-quarter housing, steel-plate belted fan, with top horizontal and one special up-discharge outlet. Fan to be run at a normal speed of 98 revolutions per minute and to deliver 72,000 cubic feet per minute.

Temperature Control: Automatic temperature control will be installed for all class-rooms and assembly hall.

Electric Work.—Building to be furnished throughout with complete system. There will be 626 outlets, 1,289 lights, 34 clocks, 43 bells, and 33 telephones.

ADDITION TO MECHANIC ARTS HIGH SCHOOL.

The preparation of plans for the extension of the Mechanic Arts High School has been the most difficult task undertaken by the Commission during the past year. This school was opened in September, 1893, in an unfinished building devoid of equipment. When that building was planned, it was difficult to secure reliable data concerning the needs of such a school, because there were few models in existence, and the development of the building and equipment, no less than the course of study and methods of instruction, has been essentially pioneer work. The addition, completed in 1900, proved entirely inadequate to meet the growing needs of the school, and the Commission was confronted not merely with the task of providing greater accommodations, but also of making the necessary readjustments to utilize the existing structure to the best advantage, and make the entire plant as perfectly adapted as possible to meet what experience has shown to be the requirements of the school.

The lot on which the extension is to be erected is on the north side of the existing building, with a frontage of 88.09 feet on Dalton street and 173.75 feet on Scotia street. The alley

between this lot and the old site will be discontinued, and a connection with Scotia street at the west end of the new building will be provided for that portion of the alley which lies west of the school lot. Total area of addition is 14,378 square feet.

The building is to be of first-class fireproof construction throughout, five stories, flat roof, and the exterior is designed to harmonize with the present structure, common red brick and sandstone trimmings being contemplated.

The plan provides for a new forge shop and new laboratories in convenient relation to the corresponding rooms in the old building, and contemplates equipping for classes in the various mechanical departments all of the rooms now used for academic purposes. The chemical and physical laboratories in the old building will continue to be used, but all the other academic departments will be accommodated in the new structure, and the entire floor area of the plant will be utilized far more economically.

The new building provides for chemical and physical laboratories, a library, a science lecture-room, a drawing-room, an emergency-room, twenty-two class-rooms for forty pupils each, four class-rooms for eighty pupils each, and an assembly hall with a seating capacity of eleven hundred. The extension will not only more than double the capacity of the existing building, but make the entire plant much more satisfactory. The basement will contain lunch-room, boiler and engine-rooms, and sanitary accommodations, etc. The basement of the present building will be arranged to provide locker accommodations.

Heating and Ventilating. — At the west end of the basement outside the main corridor will be installed a battery of three water tubular boilers capable of generating 425 horse power. Two units, each consisting of direct connected engine and 100 K. W. generator, will furnish current which will be conveyed to motors in each of the mechanical departments. These units provide adequately for emergencies, because either of them will furnish most of the power ordinarily required. The steam for heating will be exhaust steam from the engines and pumps supplemented by live steam passed through a reducing-pressure valve. The water of condensation will be returned to the boilers by means of a pump and receiver, with possibly an arrangement for gravity return at night.

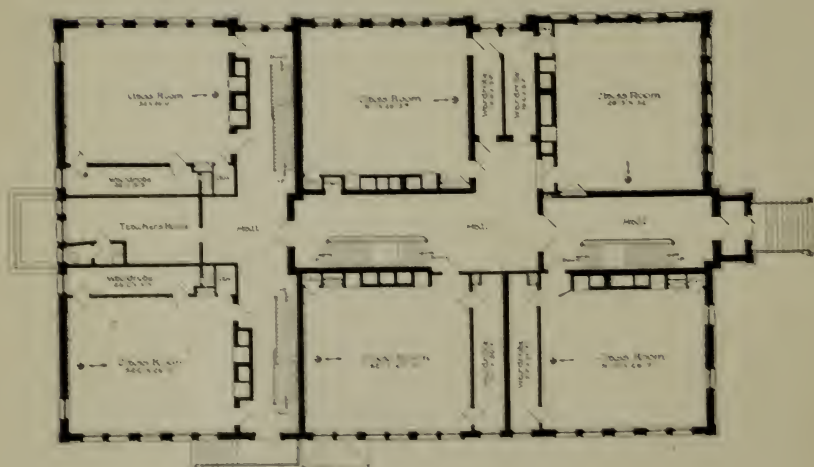
Air system: Fresh air will be supplied to the rooms by means of a plenum fan. Two new, driven by electricity, will be installed for heating the new part. Gravity vent-flues will have aspirating coils. A plenum fan is to be installed for furnishing fresh air to the large assembly hall at the top of the building.

Radiation: The indirect radiators will be located in the main heating chambers, and in supplementary groups. Certain direct radiators will be placed in the corridors, teachers' room, and assembly hall.

Electric Work. — The building will be furnished with electric lights, clocks, bells, and telephones. There will be approximately 750 outlets, 1,600 lights, 33 clocks, 36 bells, and 35 telephones.



FRANCIS PARKMAN SCHOOL.
AT
FOREST HILLS BOSTON MASS.



FIRST FLOOR PLAN.

Scale 1/8" = 1'-0"

Notes.

- indicates fire escape
- green marks entry door
- blue marks blackboard

ADDITION TO FRANCIS PARKMAN SCHOOL, AGASSIZ DISTRICT.

The present school-house, on Walk Hill, Wachusett, and Patten streets, West Roxbury, was designed originally for an eight-room building, of which but four rooms were built. The site was an extremely irregular one, and no finished grading was done in connection with the first construction. The rooms in this building were of grammar size, and, in view of the changes constantly taking place in this neighborhood, the Commissioners decided that it would be well to complete the building with a view to using it eventually for grammar purposes. The erection of the four rooms undertaken at present, and completing the building as first contemplated, was therefore so modified as to permit an addition in the future of an assembly hall and four more rooms, so that eventually this will be a grammar school, twelve-room size.

The new portion, therefore, while corresponding in the main with the old building, has square-headed windows in the central portion, because these rooms are lighted from one side only, instead of being corner rooms, and the end wall is blank and left toothed out for the future addition.

The exterior of the addition is of brick and terra cotta, to match the older building, with flat roof. The construction is like the original building, second class, with the exception of the boiler-room, which is fireproof.

The basement contains the boiler-room and play-room for girls, the toilet-rooms being in the basement of the older building. There are two new school-rooms, with a wardrobe for each, on first floor, and similar accommodation on the second floor. These school-rooms are to be of the regular grammar size, since it is contemplated adding other rooms of grammar size and an assembly hall in the future, thus making the building a grammar school-house.

The cubical contents of the addition are 113,072 cubic feet. The area of the first floor is 2,542 square feet, and twice the area of the class-rooms on that floor is 3,464 square feet. The four class-rooms average 28,268 cubic feet per room. The cost of the addition is \$34,739, or 30.72 cents per cubic foot. This unusual cost for a building which is of second-class construction is due partly to the fact that it is a comparatively small addition to an old building, partly to the fact that it has a new heating plant which not only takes care of the whole building, but will eventually take care of the future addition; partly to the fact that the cost of the grading, finishing and fencing of the whole of a very irregular lot is included, and partly to the fact that the original building to which the new portion ought to conform had considerably more ornamental terra cotta than the Commissioners are in the habit of using.

Heating and Ventilating. — The old four-room building was heated and ventilated by furnaces. The four-room addition, together with the contemplated further increase of an assembly

hall for this building, made it seem best to adopt a steam system with a capacity for handling the entire building when completed, and thus do away with the furnaces.

System: The system for steam will be low-pressure gravity return. The system for air will be gravity.

Boilers: There are to be installed two No. 5½ 12-section Mills sectional boilers. There will also be one No. 6 Cottage steam boiler, for use in summer.

Radiation: There will be a total of about 4,371 square feet of radiation, consisting of direct radiators and indirect pin radiators.

Temperature Control: The temperature of the air in the various school-rooms is to be controlled by hand-mixing dampers operated by the teachers.

Electric Work. This addition will be wired for electric light, program clocks, and telephones. There will be 64 outlets, 120 lights, 5 clocks, and 6 telephones.

GRAMMAR SCHOOLHOUSE, OLD GIBSON SCHOOL SITE, DORCHESTER.

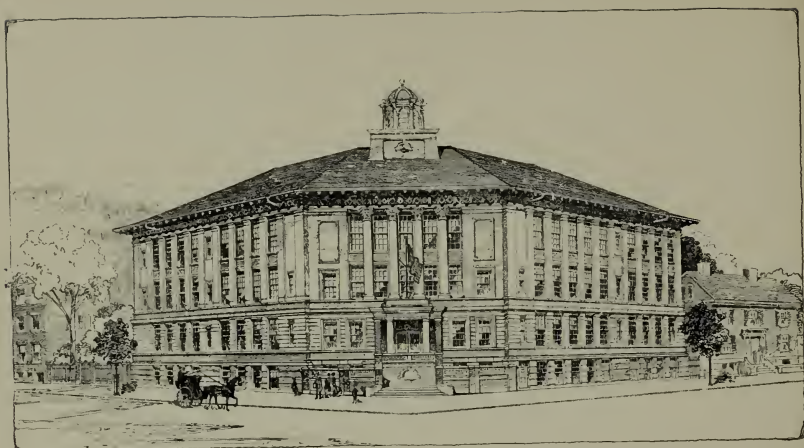
This schoolhouse is located on School street on the Old Gibson lot. The lot is very irregular, triangular in shape, and has a very large number of fine trees. In planning the building the ordinary plan was therefore departed from, and a type adopted which suited the requirements of the lot and avoided, as far as possible, the sacrifice of any of the trees. The building is so set in relation to School street that it would be possible to make an addition containing three rooms on each floor on this side. This arrangement leaves the two ends of the triangle clear for the paved playgrounds, and all the rest of the space, except that not occupied by the Old Gibson in its new position, free from planting.

The construction of the building is fireproof throughout, the exterior of common red brick and limestone.

The building contains in the basement the heating apparatus, the sanitariums for the boys and girls and the cooking-room. On the first floor there are ten class-rooms, seven on the second floor and seven on the third, the central portion of the building on the second and third floors being occupied by the assembly hall. The hall is by no means ideal in shape, but there were so many other advantages connected with the arrangement of this plan that they were allowed to outweigh the shape of the hall.

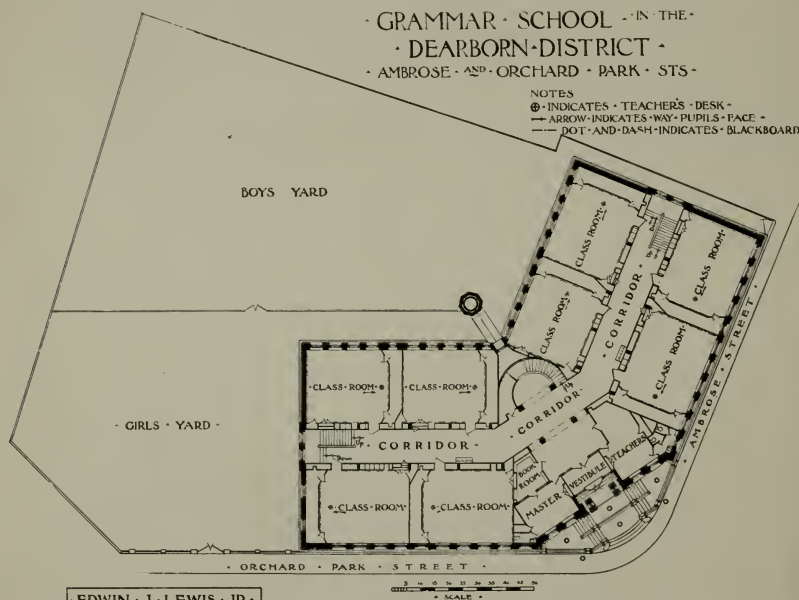
The area of the second floor is 15,477 square feet, and twice the area of the class-rooms on that floor is 15,552 square feet. It is therefore put over the limit. The cubical contents are 991,609 cubic feet, and there are twenty-four class-rooms, averaging 40,224.8 cubic feet per room.

Heating and Ventilating. — It is proposed to install in this building a system of heating and ventilation similar to that to be installed in the Grammar School, Mather District.



GRAMMAR SCHOOL - IN THE -
DEARBORN DISTRICT -
AMBROSE AND ORCHARD PARK STS -

NOTES
⊕ INDICATES TEACHER'S DESK
→ ARROW INDICATES WAY PUPILS FACE
- · - · - DOT AND DASH INDICATES BLACKBOARD



EDWIN J. LEWIS JR.
ARCHITECT

FIRST FLOOR PLAN AND LOT

Boilers: There will be two 96-horse-power horizontal steel tubular boilers, and also a 12-section No. 2 cast-iron summer boiler.

Radiation: There is to be a total radiation of 10,603 square feet, made up of primary and supplementary radiators and direct radiators placed throughout the building.

Engine: There is to be a 12 by 8 centre crank, horizontal, low-pressure engine.

Fan: There are to be two 140-inch full housing, steel plate fans, running at a speed of 166 revolutions per minute, to deliver 24,000 cubic feet each per minute.

Temperature Control: Automatic temperature control will be installed for controlling the temperature in all class-rooms.

Electric Work.—The building is furnished throughout with electric light, electric program clocks, bells, and a system of telephones. There are 616 outlets, 1,025 lights, 31 clocks, 49 bells, 31 telephones.

GRAMMAR SCHOOLHOUSE, DEARBORN DISTRICT, ROXBURY.

This building will replace the present building on the lot. The lot, which is somewhat irregular in shape, like the Old Gibson lot, again suggested a slight departure from the ordinary lines. The chief façade was put on the axis of Orchard Park street, and the building diverged on either side following the lot lines. As it was desired to keep the present building standing until the new building was complete, and perhaps for a longer period, the plan was so arranged as to occupy as nearly as possible a space which would not touch the old building. Where the new overlaps the old, the corner of the old building can be taken down and a temporary partition erected to preserve the use of the old building. This seemed especially desirable in view of the fact that it was necessary in any case to go to the expense of installing temporary sanitation in the old Dearborn School, and that the Commissioners had also within twelve months repainted the school inside. Furthermore, there is considerable activity in this neighborhood in connection with evening work, for which the old building will give ample accommodation.

The construction of the building is fireproof throughout, the exterior of common red brick and limestone.

To bring the new building down to its smallest dimension, compatible with accommodation, a few of the rooms were reduced to the grammar limit, with the approval of the Superintendent of Schools. The building covers an area of 13,353 square feet, and stands on a lot containing 14,176 square feet. When entirely completed it will occupy about 5,000 square feet more.

The basement contains the heating apparatus, boys' and girls' toilets, cooking-room, manual-training room and play-rooms, and when the building is complete the whole of the space under the addition will be available for play-room space.

On the first floor there are eight class-rooms, on the second floor nine, and on the third floor four, the central portion being occupied by the assembly hall — a total of twenty-one class-rooms.

The area of the first floor is 13,262 square feet, and twice the area of the class-rooms on that floor is 14,456 square feet, showing that it comes within the limit of an economical plan. The cubical contents of the building is 980,100 cubic feet. With twenty-one class-rooms it averages 46,671.4 cubic feet per room.

Heating and Ventilating. — System: The systems for steam and air are similar to those to be installed in the Grammar School, Mather District.

Boilers: There will be two 99-horse-power horizontal steel tubular boilers, and one 12-section, No. 2 cast-iron sectional boiler for aspirating coils.

Radiation: There will be a total of about 9,500 square feet of heating surface, comprising indirect radiators in main heating chamber, supplementary radiators and direct radiators throughout building.

Engine: There will be a 15 by 10 low-pressure engine, arranged for a normal speed of 120 revolutions per minute; this engine is large and is designed to run slowly and easily.

Fan: There will be a 9-foot fan direct connected to engine, this fan running at a normal speed of 120 revolutions per minute, to deliver about 35,000 cubic feet of air per minute.

Temperature control: Automatic temperature control is to be installed for all class-rooms.

Electric Work. — The building is furnished throughout with electric light, electric program clocks, bells, and a system of telephones. There are 418 outlets, 927 lights, 26 clocks, 37 bells, 27 telephones.

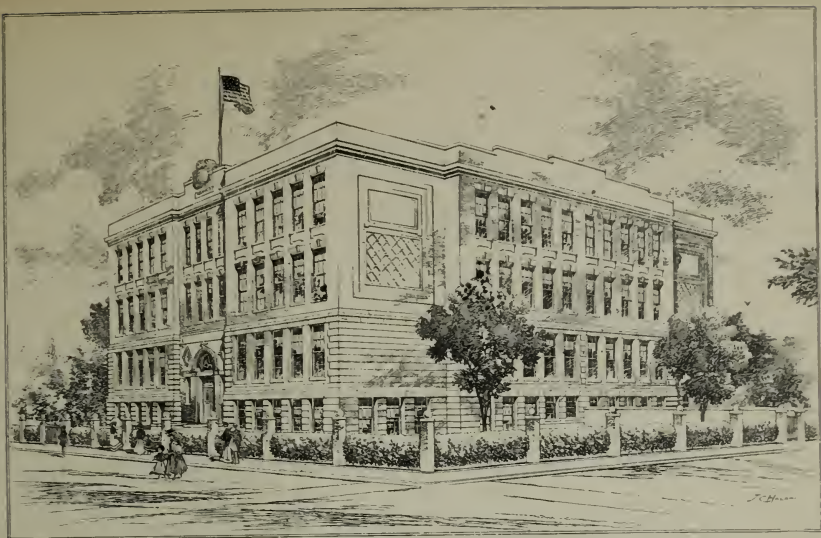
GRAMMAR SCHOOLHOUSE, WASHINGTON ALLSTON DISTRICT, ALLSTON.

The building is located on the site of the Old Everett School on Brentwood street. The old building and the portable building were moved to clear the lot, and the building was planned to contain eventually twenty-six rooms; only fourteen of these, however, were to be built at present. The building covers an area of 14,957 square feet, and is on a lot containing 44,237 square feet. It is so located as to leave large playgrounds to the south of the building, separated from the street by fences and a hedge, and the remainder of the lot, with the exception of the driveway for the boiler-room, available for planting.

The construction is fireproof throughout, with an exterior of common red brick and limestone.

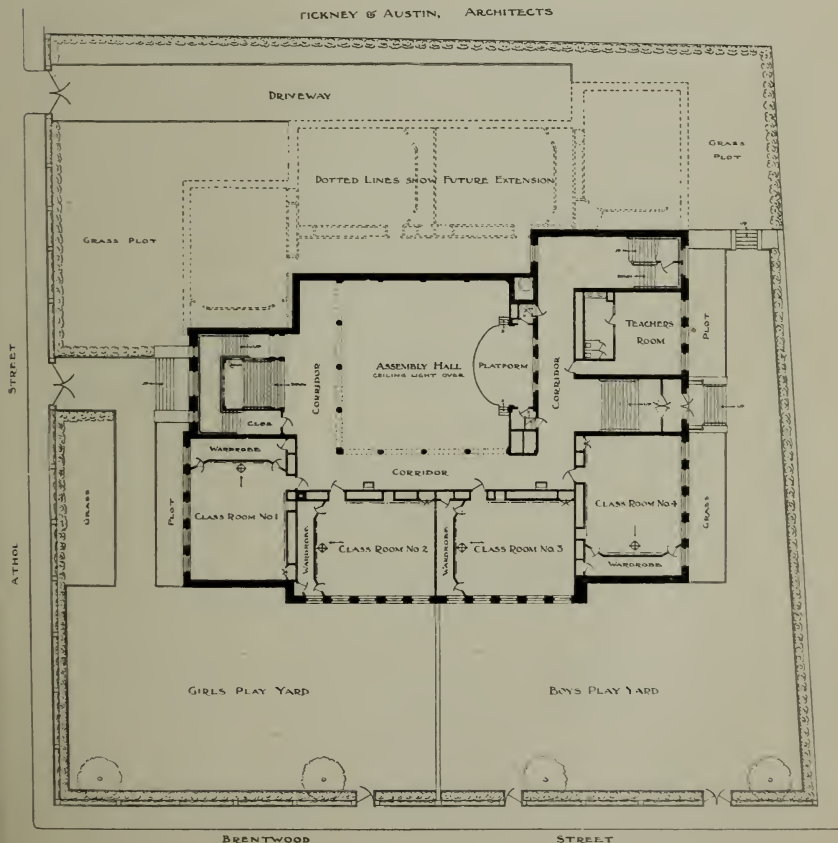
The basement contains the heating apparatus, to which nothing but a third boiler need be added to make it capable of taking care of the completed building, the toilet-rooms for the boys and girls and their play-rooms, and manual-training and cooking-rooms.

On the first floor there are four class-rooms and a teachers' room; on the second floor five class-rooms and principal's room;



GRAMMAR SCHOOLHOUSE
WASHINGTON-ALLSTON DISTRICT
BRIGHTON

FICKNEY & AUSTIN, ARCHITECTS



FIRST FLOOR PLAN

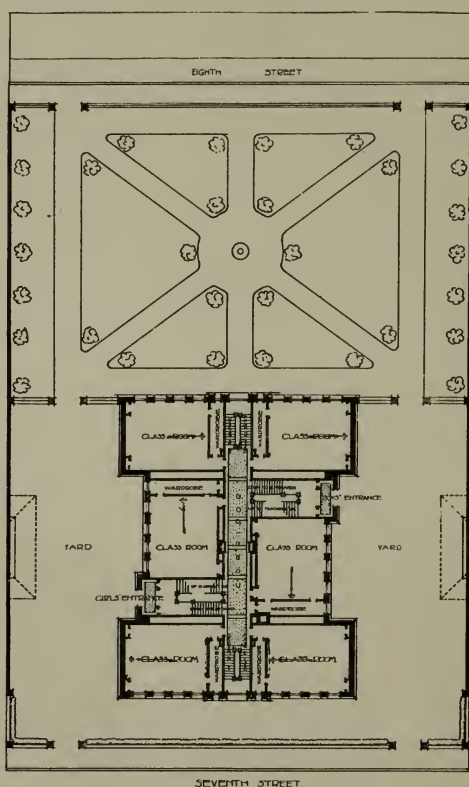
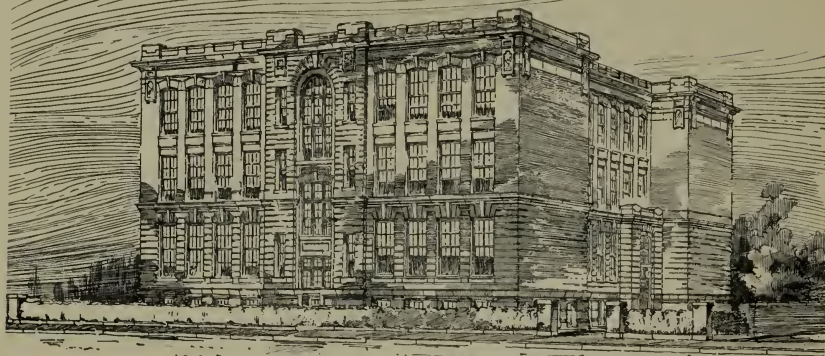
⊕ INDICATES TEACHER'S DESK

— INDICATES DIRECTION PUPILS FACE

— — — INDICATES BLACKBOARDS

0 10 20 30
SCALE IN FEET

CITY OF BOSTON - COMMON SCHOOL HOUSE
 SEVENTH STREET - BOSTON - 1870
 S. CLUTCH & WARDEN - ARCHITECTS - 1870



KEY
 ———— BLACKBOARD
 PUPILS FACE ————
 ● TEACHER'S BOX

and on the third floor five class-rooms and a storeroom. An experiment has been tried in this building, covering at the level of the second-story window sills the central portion of the plan as it is enclosed by the class-room and using this as the assembly hall on the first floor. It remains to be seen whether this arrangement will work out economically.

The area of one floor is 9,020 square feet; twice the area of the class-rooms on that floor is 8,320 square feet, but the peculiarity of the plan makes the ordinary comparison unavailable. The cubical contents of the building are 735,573 cubic feet, and there are fourteen class-rooms. It is therefore over the limit of 45,000 cubic feet per class-room, but it must be borne in mind that the boiler-room and the storage space are beyond the lines of the fourteen-room building and form part of the future complete structure, and that the heating is practically complete for the whole and that the greater part of the plumbing is installed, also the assembly hall for the future school is complete.

Heating and Ventilating. — System: The systems of steam and air are similar to those to be installed in the Grammar School, Mather District.

Boilers: There will be two 67-horse-power horizontal steel tubular boilers, and one 10 section No. 2 cast-iron sectional boiler for aspirating coils.

Radiation: There will be a total of 7,750 square feet of heating surface, comprising indirect radiators in main heating chamber, supplementary radiators and direct radiators throughout the building.

Engine: There will be 12 by 8 horizontal centre-crank steam engine.

Fan: There will be 9 by 4½ foot steel plate belted fan; this fan, at a maximum speed of 100 revolutions per minute, to deliver 34,000 cubic feet of air per minute.

Temperature Control: Automatic temperature control to be installed for all class-rooms.

Electric Work. — The building will be furnished with electric lights, electric program clocks, and a system of telephones. There will be 354 outlets, 706 lights, 20 clocks, 33 bells, and 20 telephones.

GRAMMAR SCHOOLHOUSE, CITY POINT, SOUTH BOSTON.

The land for this building runs from East Seventh to East Eighth street, being almost on the Strandway. The lot is a large one, and, as the district may increase and the building called for is small, the Commissioners decided not to follow the scheme of the Brentwood-street site, but to build a building of the dimensions called for on one end of the lot and leave the other free, so that a similar building could be erected there later, if necessary. This enabled the architects to lay out the building in such a way as to give the playgrounds adjoining the building itself and a certain

amount of planted area near the building, and yet leave nearly half the lot to be so graded, seeded, and planted with trees as not to interfere with the future building. The building covers an area of 9,743 square feet, and is on a lot containing 45,000 square feet.

The construction of the building is fireproof throughout, and the exterior of common red brick and limestone. Guastavino arch has been used in the corridors exposed and in the class-rooms on the third floor and the great span of the hall. This has added slightly to the cost of the fireproof construction, but adds dignity to the corridors and hall.

The basement contains the heating apparatus, manual-training, cooking-rooms and the toilet-rooms for the boys and girls. A three-story building, containing a two-story hall, is so compact in plan that it was not only impossible to provide play-rooms in the basement, but we were also forced to use a fan system to avoid occupying the basement space with the heating-stacks necessary for a gravity system. Experience will show whether this was wise economy.

On the first floor there are six class-rooms, four on the second and four on the third, while the assembly hall occupies the central portion of the second and third floors. Accommodation for the masters and teachers is found in the space over the vestibules between the ground and second floor. This gives a total of fourteen class-rooms.

The area of the first floor is 9,558 square feet, and twice the area of the class-rooms is 9,984 square feet, thus showing an economical plan. The cubical contents are 612,351 cubic feet, which, with fourteen class-rooms, averages 43,739.3 cubic feet per room.

Heating and Ventilating. — Systems: The systems for steam and air in this building will be similar to those in the Grammar School, Mather District.

Boilers: There are to be two 100-horse-power water tube boilers. There will also be one No. 3 8-section cast-iron sectional boiler for summer use.

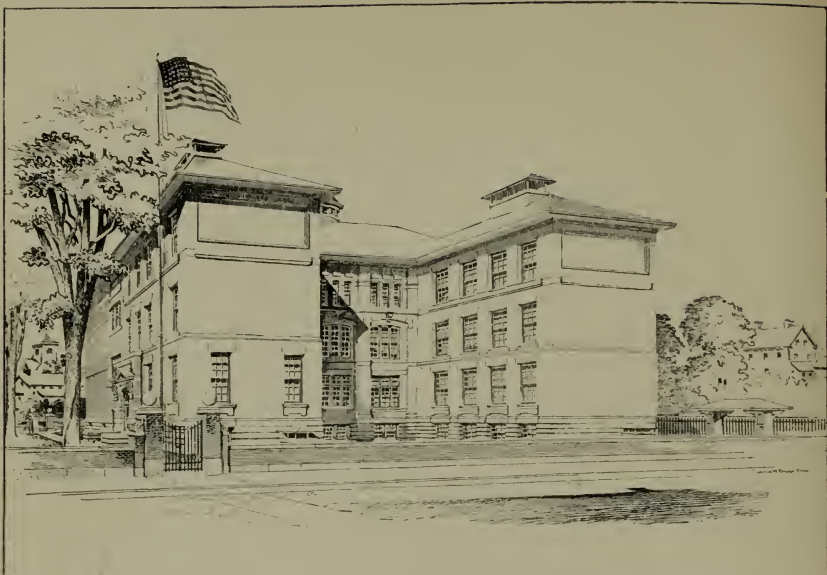
Radiation: There will be a total of about 8,154 square feet of radiation. This radiation will comprise indirect radiators in main heating chamber, supplementary radiators and direct radiators.

Engine: There will be one 10-inch by 12-inch horizontal low-pressure engine direct connected to the fan.

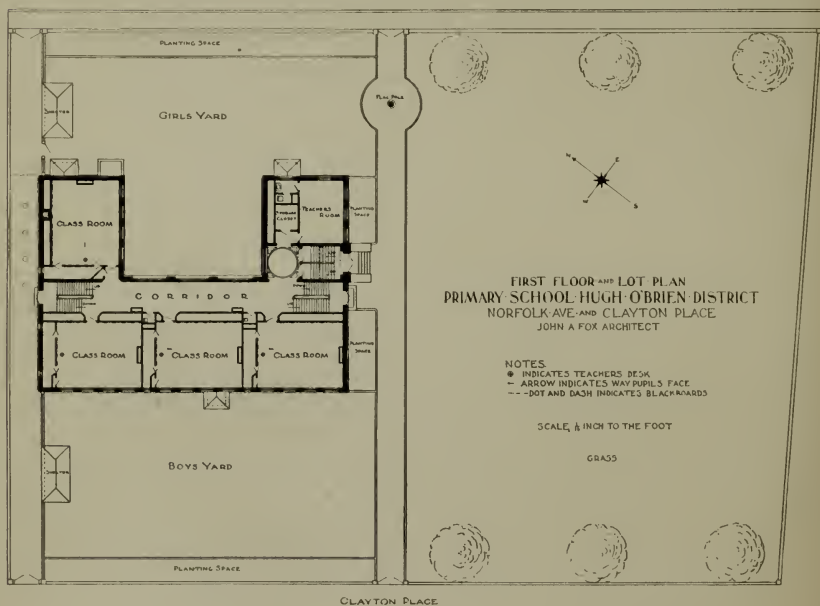
Fan: There will be a 9 by 4½ foot three-quarter housing steel-plate fan, to run at a maximum speed of 91 revolutions per minute and to deliver 27,000 cubic feet of air at that speed. At 130 revolutions per minute it should deliver 40,000 cubic feet of air per minute.

Temperature Control: Automatic temperature control is to be installed for controlling temperature in the various class-rooms.

Electric Work. — This school will be furnished with electric light, electric program clock, bells, and a system of telephones. There will be 310 outlets, 667 lights, 20 clocks, 22 bells, and 20 telephones.



NORFOLK AVE



PRIMARY SCHOOLHOUSE, LYMAN DISTRICT, EAST BOSTON.

This building is located on Paris, Morris, and Marion streets, a position about central between the Lyman and Emerson Schools. It has good light on three sides. The building covers an area of 8,898 square feet, is on a lot containing 26,000 square feet, and is so located as to give playgrounds at either end, one on the corner and one on the rear end; both playgrounds can be approached from either Paris or Morris streets. The central space on Paris and Morris streets contains the paved driveway on the north side and the garden on the south. The lot is enclosed with fences and hedges.

The construction is fireproof throughout, and the exterior common red brick and limestone.

The basement contains the heating apparatus, play-rooms and toilet-rooms. Two stories contain six rooms each, with a teachers' room and a book-room on the second floor.

The area of the first floor is 8,246 square feet, and twice the area of the class-rooms on that floor is 9,216 square feet, thus showing a plan well within the limit. The cubical contents of the building are 453,855 cubic feet, which, with twelve class-rooms, gives 37,821.2 cubic feet per room.

Heating and Ventilating. — System: The system for steam is low-pressure gravity return. The system for air is gravity.

Boilers: There will be installed two 12 section, No. 5½ Mills cast-iron sectional boilers, also one 10-section No. 2 cast-iron sectional boiler for summer use.

Radiation: There will be approximately 6,600 square feet of radiation. This radiation will be mostly indirect pin radiators, with direct radiators placed in small rooms and corridors throughout the building.

Temperature Control: The temperature of the air in the class-rooms will be controlled by means of hand-mixing dampers operated by the teachers.

Electric Work. — The school will be furnished with electric light, electric program clocks, bells, and a system of telephones. There will be 236 outlets, 443 lights, 14 clocks, 10 bells, and 14 telephones.

PRIMARY SCHOOLHOUSE, HUGH O'BRIEN DISTRICT.

This schoolhouse is located on a large lot on Norfolk avenue and Clayton place. The land was bought originally for a very large primary school, but as a smaller school was decided upon this building was placed on one side of the lot, in such a position as to enable the Board later to put a second school on the lot. The building covers an area of 6,712 square feet on the lot, which contains 56,006 square feet.

The construction of the building is fireproof throughout, the exterior of common red brick and limestone.

The rooms are so arranged that all of them have a partial southern exposure, and both yards are open to the sun. The service road for the delivery of the coal is between the school and the adjacent property on the north. The neighborhood is not at present a particularly attractive one, and therefore it is especially desirable in this case to have planting on either side of the yards and to make the unoccupied portion of the lot practically a large grassed park with trees on the outside edges.

The basement contains the heating apparatus, play-rooms, and toilets. There are four class-rooms on the first floor and a room for the teachers, and five class-rooms each on the second and third.

The area of the second floor is 6,549 square feet, and twice the area of the class-rooms on that floor is 7,200 square feet, thus coming well within the limit. The cubical contents are 438,223 cubic feet, and, there being fourteen class-rooms, this gives 31,301.6 cubic feet per room.

Heating and Ventilating.—System: The system for steam in this building will be low-pressure gravity return. The system for air will be gravity.

Boilers: There will be two 15-section No. 5½ Mills cast-iron sectional boilers, and also one 10-section No. 2 cast-iron sectional boiler for summer use.

Radiation: There will be a total of about 7,000 square feet of heating surface in this building. The greater part of this will be indirect pin radiators located in heating chambers in the basement. Direct radiators will be placed in small rooms and corridors throughout the building.

Temperature Control: The temperature of the air in the school-rooms will be controlled by means of hand-mixing dampers, operated by the teachers.

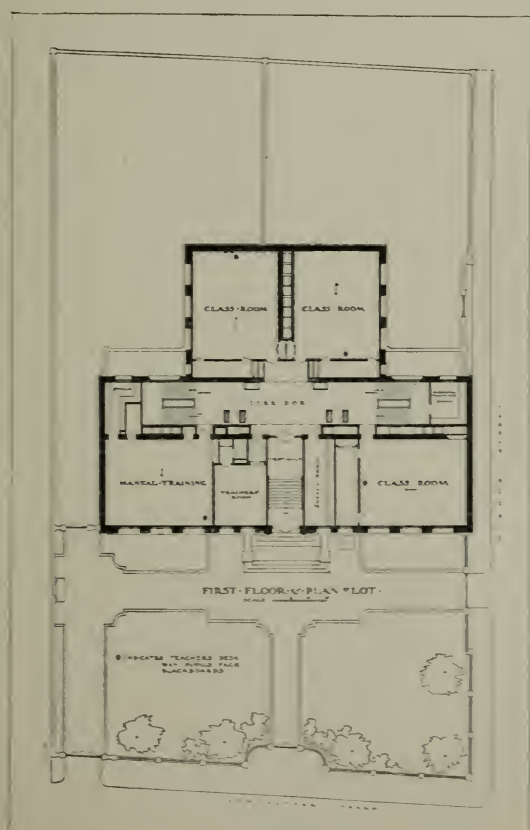
Electric Work.—The school will be furnished with electric light, electric program clocks, bells, and telephone system. There will be 233 outlets, 478 lights, 16 clocks, 13 bells, and 16 telephones.

NEW TICKNOR PRIMARY SCHOOL, JOHN A. ANDREW DISTRICT.

A new primary school to replace the present Ticknor School. The school occupies the old lot, the new building being immediately in the rear of the present one. The land that was taken by the widening of Dorchester street has been more than replaced by the land bought in the rear. As Dorchester street is a somewhat noisy thoroughfare, the front portion to the southeast of the building will be grassed and planted with trees and shrubs, while the yards for the boys and girls will be in the rear. The boys' entrance comes in from Dorchester street, but the girls enter from Middle street. The three rooms on the front and one of the rooms on the rear have a certain amount of sun all the year around.

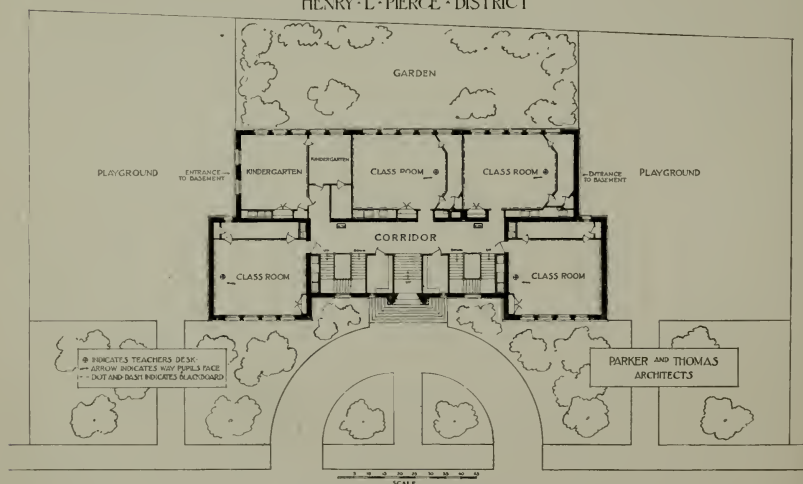
The building is of fireproof construction throughout, the exterior of red brick limestone.

NEW TICKET-PRIMARY-SCHOOL





PRIMARY SCHOOL IN THE
HENRY L. PIERCE DISTRICT



FIRST-FLOOR PLAN AND LOT

The basement contains the heating apparatus, the toilet-room and the play-rooms. On the first floor there are three class-rooms, manual-training room and a teachers' room. On the second and third floors there are five rooms each. The area of the building on the second floor is 6,609 square feet, and twice the class-room area on that floor is 7,200 square feet. It is therefore within the limit. The cubical contents are 450,248 cubic feet; counting the manual-training room as a class-room, for in this case it is merely a class-room temporarily used as a manual-training room, there are fourteen rooms, which gives 32,160.5 cubic feet per room.

This building will be let in a single contract with a forfeiture and a bonus clause of \$50 per day, and is to be completed within eight months from the date of signing contract.

Heating and Ventilating.—System: The system for steam will be low-pressure gravity return. The system for air will be gravity.

Boilers: There will be two 15-section No. 5½ Mills cast-iron sectional boilers. There will be also one 10-section No. 2 cast-iron sectional boiler for summer use.

Radiation: There will be a total of about 7,270 square feet of heating surface in this building, located principally in the main heating chambers in the basement. Direct radiators will be located in small rooms and corridors throughout the building.

Temperature Control: The temperature of the air in the class-rooms will be controlled by hand-mixing dampers, operated by the teachers.

Electric Work.—This building will be furnished throughout with electric light, electric program clocks, bells, and a complete system of telephones. There will be 262 outlets, 478 lights, 16 clocks, 12 bells, and 16 telephones.

PRIMARY SCHOOLHOUSE, HENRY L. PIERCE DISTRICT.

This building is located on Southern avenue, and the lot backs against the cemetery. The building is arranged so as to give the yards on either end of the building—one east and one west; and the space between the two yards at the rear with its southern exposure is reserved for gardening, while a strip on the front is laid out with grass and trees. All of the rooms on the rear will have southern exposure, while those on the front have morning or evening sun. The area of the building is 7,088 square feet, and stands on a lot containing 34,374 square feet.

The construction is fireproof throughout, and the exterior is of brick and limestone, with flat roof.

The basement contains the heating apparatus, the play-rooms and the toilet-rooms, while the two floors have five class-rooms each and a teachers' room.

The area of the first floor is 6,867 square feet, and twice the area of the class-rooms on that floor is 7,200 square feet. It is therefore within the limit. It is to be noted that it is more

difficult to get the smaller building down to the limit of area and cubical contents than it is with those of larger dimensions. The cubical contents are 325,051 cubic feet, and with ten rooms this gives 32,505.1 cubic feet per room.

Heating and Ventilating.—System: The system for steam will be low-pressure gravity return. The system for air will be gravity.

Boilers: There will be two 14-section, No. 5½ Mills cast-iron sectional boilers, and one 8-section No. 2 cast-iron sectional boiler for summer use.

Radiation: There will be a total of about 6,100 square feet of radiation in this building, the greater part of which will be located in main heating chambers in the basement. Direct radiators will be placed in small rooms and corridors throughout the building.

Temperature Control: The temperature control will be by means of hand-mixing dampers operated by teachers.

Electric Work.—This building will be furnished with electric light, clocks, bells, and telephones. There will be approximately 171 outlets, 355 lights, 10 bells, 13 clocks, and 13 telephones.

APPENDIX II.

 APPROPRIATION FOR LAND AND BUILDINGS
FOR SCHOOLS.

I.

The following statement shows the expenditures on account of the above appropriation from January 31, 1903, to February 1, 1904:

| | |
|--|-----------------------|
| Balance of Appropriation, February 1, 1903 . . . | \$1,707,805 05 |
| Appropriation for 1903 and 1904 | 1,500,000 00 |
| Received from sale of building, Longfellow lot . . . | 1,250 00 |
| | <hr/> |
| | <u>\$3,209,055 05</u> |

Expended for Portable Buildings :

| | |
|---|------------|
| Nos. 61-92 and Temporary Building, Hancock
Yard, erecting, heating, furnishing | \$9,398 14 |
|---|------------|

Expended for Sanitation :

| | |
|--|------------|
| Andrews School | \$1,373 00 |
| Bartlett-street School | 9,056 14 |
| Bigelow School | 1,836 25 |
| Bowditch School | 4,264 90 |
| Brighton High School | 6,745 79 |
| Clinch School | 7,486 96 |
| Dearborn School | 582 00 |
| Dudley School | 1,117 00 |
| English High and Latin
School | 63,657 64 |
| Eliot School | 4,234 35 |
| Everett School, Brighton | 3,618 50 |
| Florence-street School | 2,204 72 |
| Freeman School | 4,809 12 |
| George-street School | 9,206 64 |
| Girls' High School | 38,822 61 |
| Harbor View-street School | 4,160 75 |
| Lawrence School | 5,827 46 |
| Normal School | 1,099 00 |
| Old Dorchester High School, | 15,938 18 |
| Old East Boston High School, | 5,125 70 |

| | | | |
|----------------------------------|-------|---------------------|-------------------|
| <i>Carried forward</i> | <hr/> | <u>\$191,166 71</u> | <u>\$9,398 14</u> |
|----------------------------------|-------|---------------------|-------------------|

| | | |
|---|--------------|--------------|
| <i>Brought forward</i> . . . | \$191,166 71 | \$9,398 14 |
| Old Gibson and Annex
Schools | 12,411 80 | |
| Old Roxbury High School . . | 6,559 95 | |
| Phillips-street School . . . | 5,966 80 | |
| Phineas Bates School . . . | 475 00 | |
| Prescott School | 754 78 | |
| Roxbury High School . . . | 2,552 64 | |
| Shurtleff School | 8,613 50 | |
| Stoughton School | 5,033 85 | |
| Sanitary ventilation, miscel-
laneous schools . . . | 5,866 44 | |
| Walnut-street School . . . | 5,589 81 | |
| Wells School | 1,278 60 | |
| | <hr/> | 246,269 88 |
| <i>Expended for Fire Protection :</i> | | |
| Auxiliary Fire Alarm : | | |
| Cudworth School, \$290 00 | | |
| West Roxbury
High | 302 00 | |
| | <hr/> | \$592 00 |
| Fire Escapes : | | |
| Brimmer School, \$140 00 | | |
| Everett School . 2,870 00 | | |
| | <hr/> | 3,010 00 |
| Fire Extinguishers . . . | 261 25 | |
| | <hr/> | 3,863 25 |
| <i>Expended for Sites and Erection of New
Buildings :</i> | | |
| Addition to Francis Parkman : | | |
| Building | | 12,840 52 |
| Addition to Longfellow School : | | |
| Building | \$300 00 | |
| Site | 7,825 00 | |
| | <hr/> | 8,125 00 |
| Chapman School : | | |
| Site | | 11,562 50 |
| Charlestown High School : | | |
| Site | | 34,080 00 |
| Extension Mechanic Arts High : | | |
| Site | | 563 90 |
| Girls' Latin School : | | |
| Site | | 20 75 |
| Grammar School, City Point : | | |
| Site | | 12,855 81 |
| Grammar School, Dearborn District : | | |
| Site | | 145 50 |
| | <hr/> | |
| <i>Carried forward</i> | | \$339,725 25 |

| | | |
|---|--------------|----------------|
| <i>Brought forward</i> | | \$339,725 25 |
| Grammar School, Lowell District : | | |
| Building | | 140,578 21 |
| Grammar School, Mather District : | | |
| Site | \$646 74 | |
| Building | 6,619 53 | |
| | <hr/> | 7,266 27 |
| Grammar School, Old Gibson site : | | |
| Site | | 3,343 70 |
| Grammar School, Roger Clap District : | | |
| Building | \$162,601 95 | |
| Furnishing | 6,377 99 | |
| | <hr/> | 168,979 94 |
| Grammar School, Washington Allston District : | | |
| Site | | 457 75 |
| New Ticknor Primary School : | | |
| Site | | 12,450 00 |
| Normal School : | | |
| Site | | 51 25 |
| Primary School, Christopher Gibson District : | | |
| Building | \$82,590 30 | |
| Furnishing | 3,132 09 | |
| | <hr/> | 85,722 39 |
| Primary School, Eliot and Hancock District : | | |
| Site | \$52,940 98 | |
| Building | 42,912 69 | |
| | <hr/> | 95,853 67 |
| Primary School, Emerson District : | | |
| Building | | 75,147 15 |
| Primary School, George Putnam District : | | |
| Building | | 86,707 97 |
| Primary School, Henry L. Pierce District : | | |
| Site | | 29 50 |
| Primary School, Hugh O'Brien District : | | |
| Site | \$17,253 46 | |
| Building | 600 00 | |
| | <hr/> | 17,853 46 |
| Primary School, Lyman District : | | |
| Site | | 8,853 54 |
| Primary School, Martin District : | | |
| Site | \$150 00 | |
| Building | 129,205 72 | |
| | <hr/> | 129,355 72 |
| Schoolhouse, Phillips District : | | |
| Site | \$33,000 56 | |
| Building | 154,584 83 | |
| | <hr/> | 187,585 39 |
| <i>Carried forward</i> | | \$1,359,961 16 |

| | |
|---|-----------------------------------|
| <i>Brought forward</i> | \$1,359,961 16 |
| <i>Miscellaneous:</i> | |
| Engineering expenses | \$29,807 80 |
| Painting and whitewashing
and cleaning furniture for
sanitary purposes | 21,844 18 |
| Incidental expenses, including
salaries, blue prints, sta-
tionery, engineering sup-
plies, horse-hire and auto-
mobile hire | 17,108 79 |
| | <hr/> 68,760 77 |
| Amount voted and set aside by Schoolhouse
Commissioners for Sanitation, Fire Protec-
tion, Engineering and Office Expenses, Sites,
Construction and Furnishing of New Build-
ings | 1,353,200 54 |
| <i>Balance of Appropriation undistributed</i> | 427,132 58 |
| | <hr/> <u>\$3,209,055 05</u> <hr/> |

II.

*Subdivision of Expenses, 1903-1904. Land and Buildings
for Schools.*

| | |
|--|-----------------------------|
| Primary Schools | \$706,258 57 |
| Grammar Schools | 524,744 74 |
| High Schools | 149,495 78 |
| Not chargeable to any one school | 48,222 84 |
| | <hr/> |
| Total | <u>\$1,428,721 93</u> <hr/> |

APPENDIX III.

APPROPRIATIONS FOR RENTALS, FURNITURE,
REPAIRS, ALTERATIONS, AND EXPENSES
OF THE COMMISSION.

I.

During the year from January 31, 1903, to February 1, 1904, the following sums were expended by the Schoolhouse Department for furniture, repairs, alterations, rents, and expenses of the Commission :

| | |
|---|--------------|
| February 1, 1903, Appropriation | \$357,133 00 |
| December 1, 1903, Appropriation, additional | 7,000 00 |
| | <hr/> |
| | \$364,133 00 |
| | <hr/> |

Furniture, repairs, etc. :

| | |
|--|-------------|
| Furniture | \$52,764 91 |
| Heating apparatus | 46,924 62 |
| Carpentry, lumber, and hardware | 44,576 23 |
| Painting and glazing | 27,436 31 |
| Plumbing | 16,174 21 |
| Roofing and gutters | 15,372 43 |
| Masonry, paving, drains | 14,810 17 |
| Salaries | 10,514 10 |
| Locks, electric bells, telephones | 8,594 92 |
| Electric wiring and fixtures | 7,420 16 |
| Blackboards | 7,259 73 |
| Whitening and plastering | 7,109 62 |
| Rental and care auxiliary fire-alarm boxes | 4,636 09 |
| Gas-fitting and fixtures | 4,110 41 |
| Ventilation (galvanized-iron work) | 3,323 14 |
| Iron fences, wire screen work | 2,817 52 |
| Printing, stationery, postage | 1,893 13 |
| Flagstaffs, new, and care of old | 1,561 89 |
| Gardens in school-yards | 1,290 03 |
| Electric motors and engines | 1,267 36 |
| Asphalting | 996 12 |
| Cleaning buildings, including supplies | 936 27 |
| Teaming | 849 80 |
| Gymnasium apparatus | 673 64 |

| | |
|----------------------------------|--------------------|
| <i>Carried forward</i> | <hr/> \$283,312 81 |
|----------------------------------|--------------------|

| | |
|--------------------------------------|--------------|
| <i>Brought forward</i> | \$283,312 81 |
| Horse-keeping, etc., automobile hire | 653 91 |
| Plans, blue printing, advertising | 546 75 |
| Rubber stair-treads | 575 96 |
| Travelling expenses | 404 03 |
| Prism glass, furnishing and setting | 335 00 |
| Care of lawns | 71 40 |
| Fire hose | 59 50 |
| | <hr/> |
| | \$285,959 36 |

Rentals, etc.:

| | |
|-----------------------------|-------------|
| Primary Schools | \$18,245 15 |
| Grammar Schools | 13,091 14 |
| High Schools | 9,223 80 |
| Kindergarten Schools | 7,748 79 |
| Manual-training Schools | 2,660 00 |
| Evening Drawing Schools | 2,488 00 |
| Evening Elementary Schools, | 433 00 |
| | <hr/> |
| | 53,889 88 |

Administration Expenses:

| | |
|---------------------------------|--------------|
| Salaries | \$17,710 65 |
| Rental and care of office | 5,068 65 |
| Messenger service and telephone | 826 02 |
| Stationery and supplies | 678 44 |
| | <hr/> |
| | 24,283 76 |
| | <hr/> |
| | \$364,133 00 |
| | <hr/> |

II.

GENERAL SUBDIVISION OF EXPENSES.

Rents, salaries, furniture, repairs, and alterations in school buildings, January 31, 1903, to February 1, 1904.

| | |
|----------------------------|--------------|
| Grammar Schools | \$129,200 39 |
| Primary Schools | 109,952 91 |
| High Schools | 49,744 28 |
| Miscellaneous | 46,783 75 |
| Kindergarten Schools | 12,199 18 |
| Manual-training Schools | 7,614 89 |
| Evening Elementary Schools | 3,421 16 |
| Evening Drawing Schools | 3,140 14 |
| School for Deaf Mutes | 2,076 30 |
| | <hr/> |
| | \$364,133 00 |
| | <hr/> |

III.

SUBDIVISION AS TO SCHOOLS.

SOUTH END AND BACK BAY.

| | | |
|-------------------------------|------------|-------------|
| Appleton street | \$1,092 80 | |
| Charles C. Perkins | 1,008 09 | |
| Cook | 496 48 | |
| Dwight | 4,145 54 | |
| English High | 7,608 86 | |
| Everett | 1,137 32 | |
| Franklin | 1,617 82 | |
| Girls' High | 7,828 63 | |
| Horace Mann | 2,076 30 | |
| Joshua Bates | 967 67 | |
| Mechanic Arts High | 1,174 97 | |
| Normal | 769 85 | |
| Prince | 1,828 61 | |
| Public Latin | 3,228 47 | |
| Rice | 2,765 59 | |
| Rutland street | 870 16 | |
| West Concord street | 1,202 09 | |
| | <hr/> | \$39,819 25 |

CITY PROPER.

| | | |
|------------------------|----------|-----------|
| Andrews | \$967 59 | |
| Brimmer | 1,402 25 | |
| Pierpont | 130 06 | |
| Quincy | 1,644 28 | |
| Skinner | 276 15 | |
| Tyler street | 800 39 | |
| Way street | 877 80 | |
| Wait | 1,808 99 | |
| Winthrop | 3,931 93 | |
| | <hr/> | 11,839 44 |

NORTH AND WEST ENDS.

| | | |
|----------------------------------|-------------|-------------|
| Baldwin | \$706 73 | |
| Bowdoin | 2,467 34 | |
| Cushman | 1,282 72 | |
| Eliot | 1,852 69 | |
| Emerson | 834 85 | |
| Freeman | 1,307 24 | |
| Grant | 467 00 | |
| Hancock | 4,179 37 | |
| Hancock Annex | 91 49 | |
| | <hr/> | |
| <i>Carried forward</i> | \$13,189 43 | \$51,658 69 |

| | | | | |
|-------------------------|---|---|-------------|-------------|
| <i>Brought forward.</i> | . | . | \$13,189 43 | \$51,658 69 |
| Mayhew | . | . | 826 78 | |
| North Margin street | . | . | 526 97 | |
| Phillips | . | . | 742 67 | |
| Paul Revere | . | . | 2,479 84 | |
| Pormort | . | . | 785 92 | |
| Sharp | . | . | 1,713 60 | |
| Somerset street | . | . | 719 04 | |
| Wells | . | . | 3,232 88 | |
| Winchell | . | . | 1,536 15 | |
| Ware | . | . | 227 70 | |
| | | | <hr/> | 25,980 98 |

ROXBURY, EAST OF RAILROAD, PROVIDENCE
DIVISION.

| | | | | |
|-------------------------|---|---|------------|--------------|
| Aaron Davis | . | . | \$1,148 83 | |
| Abby W. May | . | . | 706 60 | |
| Albert Palmer | . | . | 474 89 | |
| Asa Gray | . | . | 2,291 76 | |
| Bartlett street | . | . | 854 77 | |
| Dearborn | . | . | 913 01 | |
| Dillaway | . | . | 1,556 50 | |
| Dudley | . | . | 2,962 96 | |
| George Putnam | . | . | 1,914 39 | |
| George street | . | . | 722 09 | |
| Howard avenue | . | . | 662 10 | |
| Howard avenue Annex | . | . | 58 27 | |
| Hugh O'Brien | . | . | 5,507 58 | |
| Hugh O'Brien Annex | . | . | 201 65 | |
| Hull | . | . | 729 43 | |
| Hyde | . | . | 1,027 03 | |
| Lewis | . | . | 3,226 05 | |
| Mt. Pleasant avenue | . | . | 240 14 | |
| Miles Standish | . | . | 969 08 | |
| Old Roxbury High | . | . | 1,185 34 | |
| Phillips Brooks | . | . | 1,765 60 | |
| Roxbury High | . | . | 5,391 03 | |
| Ruggles street | . | . | 29 18 | |
| Sherwin | . | . | 2,469 94 | |
| School street | . | . | 592 03 | |
| Thornton street | . | . | 97 64 | |
| W. L. P. Boardman | . | . | 2,065 44 | |
| William Bacon | . | . | 714 71 | |
| Williams | . | . | 165 31 | |
| Winthrop street | . | . | 273 99 | |
| | | | <hr/> | 40,917 39 |
| <i>Carried forward.</i> | . | . | . | \$118,557 06 |

Brought forward \$118,557 06

ROXBURY, WEST OF RAILROAD, PROVIDENCE
DIVISION.

| | | |
|----------------------------|------------|----------|
| Comins | \$1,015 77 | |
| Cottage place | 134 81 | |
| Heath street | 78 36 | |
| Ira Allen | 599 28 | |
| Lowell | 1,885 12 | |
| Lowell Annex | 165 18 | |
| Lucretia Crocker | 470 52 | |
| Martin | 2,096 11 | |
| Phillips street | 702 06 | |
| Smith street | 222 45 | |
| Wyman street | 915 59 | |
| | <hr/> | 8,285 25 |

JAMAICA PLAIN AND WEST ROXBURY.

| | | |
|--|----------|-----------|
| Agassiz | \$779 84 | |
| Bowditch | 1,515 03 | |
| Canterbury street | 79 58 | |
| Charles Sumner | 961 33 | |
| Chestnut avenue | 170 58 | |
| Francis Parkman | 537 59 | |
| Florence street | 800 38 | |
| Henry Vane | 93 30 | |
| Hillside | 286 39 | |
| Longfellow | 1,108 82 | |
| Margaret Fuller | 269 18 | |
| Mt. Vernon | 397 08 | |
| Old Agassiz | 417 91 | |
| Old Baker street | 157 11 | |
| Phineas Bates | 372 91 | |
| Robert G. Shaw | 816 00 | |
| Stephen M. Weld | 824 78 | |
| Washington street (Forest Hills) | 258 03 | |
| Washington street (Germantown) | 124 01 | |
| West Roxbury High | 4,235 80 | |
| | <hr/> | 14,205 65 |

SOUTH BOSTON.

| | | |
|----------------------------------|------------|--------------|
| Benjamin Pope | \$707 25 | |
| Benjamin Dean | 463 00 | |
| Bigelow | 2,716 60 | |
| Capen | 893 91 | |
| Choate Burnham | 701 30 | |
| Clinch | 626 31 | |
| | <hr/> | |
| <i>Carried forward</i> | \$6,108 37 | \$141,047 96 |

| | | | | |
|------------------------|---|---|------------|--------------|
| <i>Brought forward</i> | . | . | \$6,108 37 | \$141,047 96 |
| Cyrus Alger | . | . | 855 12 | |
| Drake | . | . | 960 83 | |
| Gaston | . | . | 631 74 | |
| Hawes Hall | . | . | 695 50 | |
| John A. Andrew | . | . | 2,060 44 | |
| Lawrence | . | . | 2,412 12 | |
| Lincoln | . | . | 1,720 96 | |
| Norcross | . | . | 2,099 80 | |
| Old Parkman | . | . | 539 75 | |
| Parkman | . | . | 618 35 | |
| Samuel G. Howe | . | . | 1,198 77 | |
| Shurtleff | . | . | 860 48 | |
| South Boston High | . | . | 1,942 37 | |
| Simonds | . | . | 231 72 | |
| Thomas N. Hart | . | . | 799 58 | |
| Ticknor | . | . | 1,056 10 | |
| Tuckerman | . | . | 681 66 | |
| | | | <hr/> | 25,473 66 |

DORCHESTER.

| | | | | |
|---------------------|---|---|----------|--|
| Adams street | . | . | \$517 39 | |
| Atherton | . | . | 779 59 | |
| Benjamin Cushing | . | . | 698 49 | |
| Bailey street | . | . | 343 07 | |
| Bailey street Annex | . | . | 437 05 | |
| Hon Homme Richard | . | . | 96 10 | |
| Brewster | . | . | 614 31 | |
| Brewster Annex | . | . | 238 67 | |
| Christopher Gibson | . | . | 1,266 43 | |
| Dorchester avenue | . | . | 633 34 | |
| Dorchester High | . | . | 2,827 81 | |
| Edward Everett | . | . | 2,881 54 | |
| Gilbert Stuart | . | . | 2,013 88 | |
| Glenway | . | . | 297 63 | |
| Glenway Annex | . | . | 28 63 | |
| Harbor View street | . | . | 245 99 | |
| Harris | . | . | 607 75 | |
| Henry L. Pierce | . | . | 1,374 92 | |
| Little Em'ly | . | . | 9 50 | |
| Lyceum Hall | . | . | 444 02 | |
| Mather | . | . | 3,080 46 | |
| Mayflower | . | . | 257 20 | |
| Mary Hemenway | . | . | 1,722 47 | |
| Minot | . | . | 1,066 02 | |
| Marshall | . | . | 3 00 | |
| Old Dorchester High | . | . | 764 51 | |
| Old Everett | . | . | 690 75 | |

| | | | | |
|------------------------|---|---|-------------|--------------|
| <i>Carried forward</i> | . | . | \$23,940 52 | \$166,521 62 |
|------------------------|---|---|-------------|--------------|

SCHOOLHOUSE DEPARTMENT.

63

| | | | | |
|------------------------|---|---|-------------|--------------|
| <i>Brought forward</i> | . | . | \$23,940 52 | \$166,521 62 |
| Old Gibson | . | . | 300 70 | |
| Old Mather | . | . | 146 05 | |
| Quincy street | . | . | 349 64 | |
| Roger Wolcott | . | . | 2,587 50 | |
| Roger Clap | . | . | 1,669 47 | |
| Savin Hill | . | . | 316 48 | |
| Stoughton | . | . | 1,663 53 | |
| Thetford avenue | . | . | 914 18 | |
| Tileston | . | . | 2,057 55 | |
| Walnut street | . | . | 567 33 | |
| Ward-room Building | . | . | 2 15 | |
| William E. Russell | . | . | 17 87 | |
| <hr/> | | | | 34,532 97 |

CHARLESTOWN.

| | | | | |
|---------------------------|---|---|----------|-----------|
| Adams and Chestnut street | . | . | 458 62 | |
| Bunker Hill Grammar | . | . | 3,318 85 | |
| Bunker Hill Primary | . | . | 590 23 | |
| Benjamin F. Tweed | . | . | 1,001 70 | |
| Charlestown High | . | . | 2,476 46 | |
| City Hall, Charlestown | . | . | 7 19 | |
| Common street | . | . | 392 40 | |
| Copley | . | . | 1,190 31 | |
| Chauncey place | . | . | 63 21 | |
| Frothingham | . | . | 3,950 59 | |
| Frothingham Annex | . | . | 41 96 | |
| Harvard | . | . | 2,663 28 | |
| Harvard Hill | . | . | 738 45 | |
| Mead street | . | . | 303 72 | |
| Medford street | . | . | 398 24 | |
| Polk street | . | . | 1,072 69 | |
| Prescott | . | . | 2,338 74 | |
| Warren | . | . | 1,351 05 | |
| William H. Kent | . | . | 195 49 | |
| <hr/> | | | | 22,553 18 |

EAST BOSTON.

| | | | | |
|------------------------|---|---|-------------|--------------|
| Adams | . | . | 1,246 61 | |
| Austin | . | . | 1,207 92 | |
| Blackinton | . | . | 1,302 91 | |
| Chapman | . | . | 2,742 26 | |
| Cudworth | . | . | 1,993 14 | |
| East Boston High | . | . | 1,277 62 | |
| Emerson | . | . | 2,502 16 | |
| Lyman | . | . | 2,515 60 | |
| Noble | . | . | 602 81 | |
| <hr/> | | | | |
| <i>Carried forward</i> | . | . | \$15,391 03 | \$223,607 77 |

| | | | | |
|------------------------|---|---|-------------|--------------|
| <i>Brought forward</i> | . | . | \$15,391 03 | \$223,607 77 |
| Noble Annex | . | . | 66 38 | |
| Old East Boston High | . | . | 1,430 93 | |
| Plummer | . | . | 596 77 | |
| Tappan | . | . | 653 56 | |
| Webb | . | . | 288 00 | |
| | | | <hr/> | \$18,426 67 |

BRIGHTON.

| | | | | |
|--|---|---|----------|-----------|
| Aberdeen | . | . | \$103 13 | |
| Auburn | . | . | 293 15 | |
| Bennett | . | . | 1,784 22 | |
| Bennett Annex | . | . | 773 56 | |
| Brighton High | . | . | 1,111 97 | |
| Everett | . | . | 20 21 | |
| Frederic A. Whitney | . | . | 812 89 | |
| Harvard | . | . | 192 48 | |
| Hobart street | . | . | 427 52 | |
| Old Brighton High | . | . | 12 50 | |
| Oak square | . | . | 337 07 | |
| Union street | . | . | 12 50 | |
| Washington Allston | . | . | 1,486 77 | |
| Washington Allston Annex | . | . | 116 68 | |
| William Wirt Warren | . | . | 597 55 | |
| Winship | . | . | 612 71 | |
| | | | <hr/> | 8,694 91 |
| Portable buildings | . | . | | 2,872 28 |
| Incidentals not chargeable to any one school | . | . | | 46,244 00 |

HIRED BUILDINGS, RENTS AND REPAIRS.

| | | | | |
|--|---|---|-------------|--------------|
| Athenæum Building | . | . | \$857 63 | |
| Byron court, No. 23 | . | . | 395 69 | |
| Beech-street lot | . | . | 1 00 | |
| Bennington-street Chapel | . | . | 672 00 | |
| Broadway, No. 732 | . | . | 1,680 00 | |
| Chambers street, No. 103 | . | . | 578 85 | |
| Chambers street, No. 105 | . | . | 2,252 16 | |
| Church of the Redeemer | . | . | 840 00 | |
| Columbus avenue, No. 147 | . | . | 1,337 99 | |
| Columbus avenue, No. 1448 | . | . | 1,045 88 | |
| Centre street, No. 341 | . | . | 508 55 | |
| Chambers street, No. 33 | . | . | 907 25 | |
| Chambers street, No. 38 | . | . | 1,090 23 | |
| Chauncy Hall | . | . | 9,857 94 | |
| Dayton avenue, No 1 | . | . | 600 75 | |
| Eliot street, Jamaica Plain | . | . | 300 00 | |
| Ford and Saratoga streets, East Boston | . | . | 811 90 | |
| | | | <hr/> | |
| <i>Carried forward</i> | . | . | \$23,737 82 | \$299,845 63 |

| | | | | |
|------------------------------|---|---|-------------|--------------------------|
| <i>Brought forward</i> | . | . | \$23,737 82 | \$299,845 63 |
| Fourth street, No. 484 | . | . | 5,403 88 | |
| Glenway street, No. 58 | . | . | 734 50 | |
| Greenwood Hall | . | . | 618 79 | |
| Gay Head and Centre streets | . | . | 960 00 | |
| Harvest and Boston streets | . | . | 546 33 | |
| Heath street, No. 179 | . | . | 434 65 | |
| Heath street, No. 255 | . | . | 942 75 | |
| Huntington avenue, No. 737 | . | . | 693 41 | |
| Huntington avenue, No. 741 | . | . | 714 55 | |
| Huntington avenue, No. 766 | . | . | 780 00 | |
| Huntington avenue, No. 908 | . | . | 720 00 | |
| Hewlett street, No. 17 | . | . | 241 90 | |
| Lauriat avenue, No. 170 | . | . | 700 00 | |
| Mt. Vernon street, No. 20 | . | . | 1,377 93 | |
| Mt. Vernon-street lot | . | . | 62 80 | |
| Moon street | . | . | 9,892 87 | |
| Methodist Chapel | . | . | 660 00 | |
| North Russell street, No. 31 | . | . | 4,558 20 | |
| Princeton and Shelby streets | . | . | 300 00 | |
| Parmenter street, No. 20 | . | . | 1,900 00 | |
| Parmenter street, No. 32 | . | . | 474 42 | |
| Saratoga street, No. 399 | . | . | 314 00 | |
| Salem street, No. 122 | . | . | 819 14 | |
| Standish street, No. 18 | . | . | 692 00 | |
| South Baptist Church | . | . | 820 85 | |
| Tremont street, No. 1508 | . | . | 600 00 | |
| Tremont street, No. 1518 | . | . | 607 00 | |
| Tremont street, No. 1520 | . | . | 738 00 | |
| Tomfohrde Hall | . | . | 400 00 | |
| Unitarian Church, Roslindale | . | . | 757 87 | |
| Washington street, No. 323 | . | . | 375 38 | |
| Walk Hill street, No. 727 | . | . | 291 31 | |
| Washington street, No. 2307 | . | . | 1,417 02 | |
| | | | <hr/> | 64,287 37 |
| Total | . | . | . | <hr/> <hr/> \$364,133 00 |

APPENDIX IV.

APPROPRIATIONS FOR SCHOOLHOUSES.

I.

The following statement shows the expenditures on account of the above appropriations for completing and finishing schoolhouses turned over to the Schoolhouse Department by the School Committee, February 11, 1902 :

| | | |
|--|-----------------|------------|
| February 1, 1903, balance of appropriation un- | | |
| expended | \$12,468 | 61 |
| Amount received from revenue, May 1, 1903 | 139 | 75 |
| Additional appropriation, January 1, 1904 | 14,068 | 40 |
| Additional appropriation transferred by City | | |
| Auditor from Grammar School, Bowdoin | | |
| District, January 31 | 362 | 90 |
| | <u>\$27,039</u> | <u>66</u> |
| | | |
| Bigelow School : | | |
| Building | \$642 | 64 |
| Furnishing | 387 | 26 |
| | <u></u> | \$1,029 90 |
| Dorchester High School : | | |
| Building | | 445 00 |
| Ira Allen School : | | |
| Building | | 122 05 |
| Longfellow School : | | |
| Rebuilding fence (street widening) | | 400 00 |
| Roger Wolcott School : | | |
| Building | \$7,399 | 51 |
| Furnishing | 853 | 66 |
| | <u></u> | 8,253 17 |
| South Boston High School : | | |
| Building | | 1,683 26 |
| Total expenditures for 1903 and 1904 | \$11,933 | 38 |
| Balance of appropriation for 1904 and 1905 | 15,106 | 28 |
| | <u>\$27,039</u> | <u>66</u> |

II.

Subdivision of expenditures for building, furnishing, and grading of lots for 1903 and 1904.

[illegible]

APPENDIX V.

HIRED BUILDINGS.

I.

Rooms in the following buildings have been hired for school purposes, including offices for the Schoolhouse Department. The total amount expended for rentals, taxes, water rates, heating, lighting and janitors' expenses in connection with the same, during the year February 1, 1903, to February 1, 1904, was \$58,958.53.

| For | Location. | Remarks. |
|--|--|---|
| Comins District..... | Tremont street, 1518..... | Rent per annum, \$600, including heat and janitor. |
| Comins District Kindergarten.. | Germania Hall, 1448 Columbus avenue..... | Rent per annum, \$720, including heat and janitor. |
| Christopher Gibson District... | Glenway street, 58, Dorchester..... | Rent per annum, \$720, including heat and janitor; city pays water rates; vacated Nov. 18, 1903. |
| Christopher Gibson District Kindergarten | Greenwood Hall, Dorchester..... | Rent per annum, \$600, including heat and janitor. |
| Christopher Gibson District... | Standish street, 18, Dorchester..... | Rent per annum, \$720, including heat and janitor; city pays water rates; vacated Nov. 18, 1903. |
| Christopher Gibson District ... | Washington street, 323, Dorchester..... | Rent per annum, \$360; city pays heat, water rates, and janitor; vacated Nov. 6, 1903. |
| Dearborn District..... | Dayton avenue, 1..... | Rent per annum, \$600, including heat and janitor. |
| Eliot District..... | Moon street, St. John's Parochial School..... | Rent per annum, \$11,640, including heat; city pays janitor and water rates; additional rooms (first 3, then 5) hired for evening school. |
| Eliot District..... | Salem street, 122..... | Rent per annum, \$480; light, heat and janitor furnished by city. |
| Emerson District | Bennington-street Chapel, East Boston..... | Rent per annum, \$672, including heat; city pays janitor. |
| Emerson District Kindergarten..... | Princeton and Shelby streets, East Boston..... | Rent per annum, \$300, not including heat or janitor. |

HIRED BUILDINGS.—Continued.

| For | Location. | Remarks. |
|--|---|---|
| Emerson District..... | Ford and Saratoga streets,
East Boston..... | Rent per annum, \$480,
not including heat,
but including janitor. |
| Emerson District | Booth Hall..... | Hired for graduating
exercises of Blackin-
ton School, at a rental
of \$10. |
| Evening Drawing School..... | Columbus avenue, 147..... | Rent per annum, \$1,300,
not including heat or
janitor. |
| Evening Drawing School..... | Masonic Hall, 2307 Wash-
ington street, Roxbury... | Rent per annum, \$1,000;
city pays water rates,
heat, and janitor. |
| Gaston District..... | Pilgrim Hall, Broadway,
732, South Boston..... | Rent per annum, \$1,680,
including heat and
janitor. |
| Gaston District Kindergarten.. | Church of the Redeemer,
South Boston..... | Rent per annum, \$840,
including heat and
janitor. |
| George Putnam District Kin-
dergarten. | Byron court, 23, Roxbury.. | Rent per annum, \$360,
including janitor, not
including heat or
water rates. |
| George Putnam District..... | Tomfohrde Hall, Boylston
Station..... | Rent per annum, \$400,
including heat and
water rates; city
pays janitor. |
| Girls' Latin School..... | Chauncy Hall, Copley sq... | Rent per annum, \$6,000,
to July 1, 1903; from
then \$7,000, not in-
cluding heat, water
rates, or janitor. |
| Hancock District Kindergarten
and Primary..... | Parmenter street, 20..... | Rent per annum, \$1,900,
including heat and
janitor. |
| Hancock District..... | Parmenter street, 82..... | Rent per annum, \$400,
including heat and
janitor. |
| John A. Andrew District Kin-
dergarten..... | Methodist Chapel, Vinton
street, South Boston..... | Rent per annum, \$660,
including heat, but
not janitor. |
| Lincoln District..... | South Baptist Church, East
Fourth st., South Boston, | Rent per annum, \$1,200,
including heat and
janitor. |
| Longfellow District Kinder-
garten and Primary..... | Beech street, Phineas Bates
Portable Building..... | Rent per annum, \$1, for
use of land only. |
| Longfellow District..... | Hewlett street, 17..... | Rent per annum, \$240,
not including heat or
janitor. |
| Longfellow District Kinder-
garten and Primary..... | Unitarian Church, Ros.... | Rent per annum, \$900,
including heat and
janitor; one room va-
cated Jan. 1, 1904. |
| Lowell District..... | Gay Head and Centre sts.,
Roxbury..... | Rent per annum, \$960,
including heat and
janitor. |

HIRED BUILDINGS. — *Continued.*

| For | Location. | Remarks. |
|--------------------------------|---|--|
| Lowell District | Centre street, 341, Jamaica Plain..... | Rent per annum, \$480, not including heat, water, or janitor. |
| Lowell District | Heath street, 179..... | Rent per annum, \$420, including heat and janitor; city pays water rates. |
| Lowell District Kindergarten.. | Heath street, 255..... | Rent per annum, \$720, including heat and janitor; city pays water rates. |
| Manual Training School..... | Tremont street, 1508..... | Rent per annum, \$600, including heat and janitor. |
| Manual Training School..... | Ellot street, Jamaica Plain, | Rent per annum, \$300, including heat and janitor. |
| Martin District | Tremont street, 1520..... | Rent per annum, \$720, including heat and janitor; city pays water rates. |
| Martin District | Huntington avenue, 737..... | Rent per annum, \$660, including heat and janitor; city pays water rates. |
| Martin District | Huntington avenue, 741 | Rent per annum, \$696, including heat and janitor; city pays water rates. |
| Martin District | Huntington avenue, 766..... | Rent per annum, \$780, including heat and janitor. |
| Martin District..... | Huntington avenue, 908..... | Rent per annum, \$720, including heat and janitor. |
| Roger Clap District..... | Mount Vernon street..... | Rent of land for site of Portable Building, \$62.80; vacated Oct. 1, 1903. |
| Roger Clap District..... | Mount Vernon street, 20, Dorchester..... | Rent per annum, \$1,200, not including heat, water, or janitor; vacated Oct. 1, 1903. |
| Roger Clap District..... | Winthrop Hall, Upham's Corner..... | Rent for one day and rehearsal for graduating exercises, \$20. |
| Roger Clap District | Harvest street, Parish Hall, | Rent per annum, \$900, not including heat or janitor; vacated Nov. 1, 1903. |
| Roger Clap District..... | Athenæum Building, East Cottage street, Dorchester, | Rent per annum, \$800, not including heat, janitor or water rates; vacated Dec. 1, 1903. |
| Roger Wolcott District | Walk Hill street, 727..... | Rent per annum, \$360, including heat and janitor. |

HIRED BUILDINGS.— *Concluded.*

| For | Location. | Remarks. |
|---|--|--|
| Roger Wolcott District, Kindergarten | Lauriat avenue, 170, Dorchester..... | Rent per annum, \$700 to Jan. 1, after that date, \$600, including heat, water and janitor. |
| Shurtleff District..... | East Fourth street, 484, South Boston..... | Rent per annum, \$399.96 to Dec. 1, from that date, \$600, not including janitor, heat or water rates. |
| Wells District..... | North Russell street, 31..... | Rent per annum, \$4,500, including heat, light and janitor. |
| Wells District..... | Chambers street, 33..... | Rent per annum, \$800, not including heat or janitor; city pays water rates and one-half cost of gas. |
| Wells District, Kindergarten and Grammar..... | Chambers street, 38..... | Rent per annum, \$1,080, including heat, janitor and water rates. |
| Wells District..... | Chambers street, 103..... | Rent per annum, \$1,620, including heat and janitor; city pays water rates. |
| Wells District, Kindergarten... | Chambers street, 105..... | Rent per annum, \$900, including heat and janitor; city pays water rates. |
| Offices of Schoolhouse Department..... | Walker Building, 120 Boylston street..... | Rent per annum, \$4,200, including heat; city pays janitor's services and lighting. |

II.

SUBDIVISION.

The following shows the subdivision of rentals, taxes, water rates, heating, lighting, and janitor's services paid for each hired building during the year:

| | |
|--|------------|
| Athenæum Building, Cottage street, Dorchester . | \$747 00 |
| Byron court, No. 23, Roxbury | 382 00 |
| Beech street lot, Roslindale | 1 00 |
| Bennington street Chapel, East Boston | 672 00 |
| Broadway, No. 732, South Boston | 1,680 00 |
| Booth Hall, Orient Heights | 10 00 |
| Chambers street, No. 33, Presbyterian Chapel | 866 85 |
| Chambers street, No. 38, St. Andrew's Chapel | 1,080 00 |
| Chambers street, No. 103 | 1,768 00 |
| Chambers street, No. 105 | 225 00 |
| <i>Carried forward</i> | \$7,431 85 |

| | |
|---|--------------------|
| <i>Brought forward</i> | \$7,431 85 |
| Centre street, No. 331, corner Gay Head street | 960 00 |
| Centre street, No. 341, Jamaica Plain | 490 00 |
| Columbus avenue, No. 147 | 1,300 00 |
| Columbus avenue, No. 1448, Germania Hall | 720 00 |
| Chauncy Hall, Copley square | 9,223 80 |
| Dayton avenue, No. 1 | 600 00 |
| Eliot street, Jamaica Plain, Trustee Building | 300 00 |
| East Fourth street, Church of Redeemer | 840 00 |
| East Fourth street, South Baptist Church | 800 00 |
| East Fourth street, No. 484 | 433 29 |
| Ford and Saratoga streets, East Boston | 480 00 |
| Glenway street, Greenwood Hall, Dorchester | 600 00 |
| Glenway street, No. 58, Dorchester | 686 00 |
| Harvard street, Dorchester, Parish Hall | 150 00 |
| Heath street, No. 179, Roxbury | 433 00 |
| Heath street, No. 255, Roxbury | 733 00 |
| Hewlett street, No. 17, Roslindale | 240 00 |
| Huntington avenue, No. 737 | 673 00 |
| Huntington avenue, No. 741 | 709 00 |
| Huntington avenue, No. 766 | 780 00 |
| Huntington avenue, No. 908 | 720 00 |
| Lauriat avenue, No. 170, Dorchester | 700 00 |
| Mt. Vernon street, No. 20, Dorchester | 1,013 00 |
| Mt. Vernon street, cor. Boston street, Dorchester | 62 80 |
| Moon street, Parochial School | 9,239 14 |
| North Russell street, No. 31 | 4,500 00 |
| Parmenter street, No. 20, North End Union | 1,900 00 |
| Parmenter street, No. 32 | 400 00 |
| Princeton and Shelby streets, East Boston | 300 00 |
| Saratoga street, No. 399, East Boston | 300 00 |
| Standish street, No. 18, Dorchester | 673 00 |
| Salem street, No. 122 | 160 00 |
| South street, Roslindale, Unitarian Church | 675 00 |
| Tremont street, No. 1508, Roxbury | 600 00 |
| Tremont street, No. 1518, Roxbury | 600 00 |
| Tremont street, No. 1520, Roxbury | 733 00 |
| Tomfohrde Hall, Jamaica Plain | 400 00 |
| Vinton street, South Boston, Methodist Chapel | 660 00 |
| Walk Hill street, No. 727, West Roxbury | 120 00 |
| Washington street, No. 323, Dorchester | 343 00 |
| Washington street, No. 2307, Roxbury | 1,188 00 |
| Winthrop Hall, Upham's Corner, Dorchester | 20 00 |
| Total for hired rooms | \$53,889 88 |
| Rooms are hired at 120 Boston street, for offices
for the Schoolhouse Commission, and paid from
the expenses of administration to the amount of | 5,068 65 |
| Total | <u>\$58,958 53</u> |



FIG. 2 —New Adjustable Furniture in the William E. Russell School.



FIG. 3. — The same School-room, with the Scholars seated.

APPENDIX VI.

REPORT ON SCHOOL DESK AND CHAIRS.

A year ago the writer, at the request of the Schoolhouse Commissioners, prepared a report on the scientific data applying to the proper seating of school children. This report was published as Appendix VIII. of last year's report of the Commissioners. In it the attempt was made to cull out from the great mass of literature on the subject such data and suggestions as might be of practical service, casting aside much of the German work, which must be characterized as scientific over-elaboration, and much of the pseudo-literature inspired by essentially individual ideas and promoted by manufacturers of one or another desk or chair.

There is to-day no question of the practical value of proper school furniture. Many serious deformities owe their beginning to improper sitting attitudes; these are produced in the less robust. Even in the most vigorous bad carriage and the habit of clumsy and improper sitting are forced by ill-fitting seats and desks. Improper attitudes mean eye-strain in many cases. Last, and yet not entirely unimportant, neatness and order and discipline require proper attitudes, hardly possible without a decently adjusted desk and chair.

The only objection to proper and adjustable furniture is that it is not adjusted in practice, but apparently the difficulties of adjustment have been met, as we will show later. The only questions are as to what furniture and what adjustments we consider desirable, and as to the methods of adjustment to the individual scholar.

The report previously referred to showed what we must consider as the physiologically desirable points. To some extent an attempt was made in this report to discriminate between features of construction and adjustment practically desirable and those physiologically justifiable but hardly of direct import.

With a somewhat enlarged experience in the matter, the writer is not inclined to change much from the attitude then taken. At that time it was stated that the essential features to be provided for were :

- (1.) Adjustment for height — vertically — of chair.
- (2.) Adjustment for height — vertically — of desk.
- (3.) A back rest of proper inclination with an adequate support for the lower back.
- (4.) A proper depth of seat.
- (5.) A proper slope of seat.
- (6.) An adjustment of desk or chair for plus or minus distance * (varying with position).

* Plus distance is that between the front edge of the seat and the vertical line dropped from the near edge of the desk; minus distance, the distance of the front edge of the seat in advance of this line.

Only in regard to the last item is the writer inclined to change of view, and that only for severely practical considerations. It may later prove worth while to provide the upper grades with an adjustment for plus and minus distance, for writing and reading position, respectively, but at present even this seems impracticable. The trouble is that no device yet presented that gives this adjustment is really satisfactory, nor is there any satisfactory solution in sight. Those devices that work best are hopelessly complicated and expensive, while the simpler devices are not very smooth-running, and by no means noiseless. Any arrangement permitting and encouraging noise is obviously undesirable for the younger scholars at least. On the whole it has seemed wisest not to attempt this part of the problem for the present.

As to the other requirements, the only one requiring any study proved to be No. 3, namely, the provision of a seat back of such curves and slope as to give proper support for the lower back. The chairs and desks on the market, properly selected, provide for the other adjustments, but none of the manufacturers seem to have paid much attention to back supports. The ordinary seat-back is practically that of the "kitchen" chair, and entirely inadequate.

Accordingly we attempted, during the summer of 1903, to work out a model which should be both adequate and practical. The physiological requirements for such a seat-back are that it must

(a.) Support the lower back so as to maintain the normal curve.

(b.) Support the lower dorsal region as well as the lumbar.

(c.) Stop below the shoulder blades.

(d.) Support the back in the writing position, at least to the extent of steadying the pelvis.

(e.) Be concave from side to side, to minimize lateral twisting, as well as for comfort.

(f.) Be adjustable for individual height.

That is, we must have an uniform model, adjustable for height, of such curves as shall make it conform to *a*, *b*, *c*, and *d*, for the general run of scholars.

At the beginning of this investigation, trial supports were carved out, concave from side to side, convex in profile, corresponding in curve and slope to the theoretical data. With these set on lead castings carried in the slot of an upright iron casting at the back of the seat we were ready for a practical test.

Through the courtesy of Dr. Lovett, of the Children's Hospital, we were enabled to carry out the trials on a considerable number of children with normal and slightly abnormal back-curves, and had moreover the advantage of criticism and suggestion from him and from others of the hospital staff. We soon found (*a*) that at least two models would be required — one for larger and one for smaller children; (*b*) that the backward slope we had assumed to be necessary was too great to give support to the lower dorsal region; (*c*) that comfort required a sharper curve backward at the

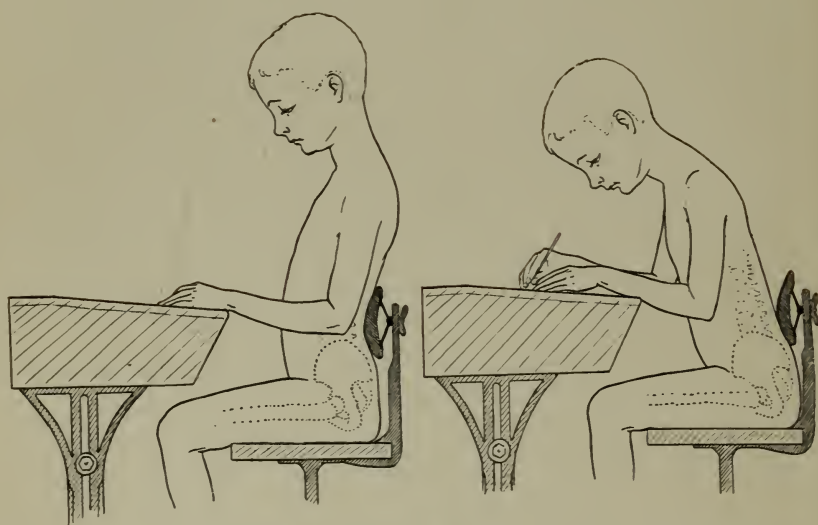


FIG 1

lower portion of the support than we had assumed. Accordingly we went to work with the drawshave and with "modelling compound," adding and subtracting, and constantly checking the results with fresh trials, till two models of different sizes were obtained that seemed satisfactory. Somewhat to our surprise, the curves, different enough from what we had started with, were practically identical in the larger and smaller model.

During these experiments several points became obvious that may be noted:

(1.) In a proper (*i.e.*, nearly balanced) sitting position, a relatively low back-support is ample, and as comfortable as a higher one.

(2.) In the reading position no support is useful below the top of the sacrum, and owing to the great individual variation in fat and clothes about the hips the adjustment of the support is simplified by leaving a clear space between this point and the chair-seat.

(3.) With such a clear space, and with the back support only touching the part needing support, the individual variation in curves is (practically) less than we had anticipated.

(4.) In leaning slightly forward for writing the spine does not simply swing away from the support. There is a slight rocking of the pelvis, and a tendency of the pelvis to slide back (on the yielding flesh of the buttocks) in such a way that the back is still in contact with the support, and may be definitely steadied by this support if it is properly curved. (See Fig. 1.) This point seems to have been overlooked. Of course, unless there is a free space beneath the lower edge of the back-rest no such motion occurs — an important reason in favor of leaving such a space free.

The model finally settled on consists of a curved support of wood 9 $\frac{3}{4}$ inches wide and 5 inches high,* with a concavity of one inch in depth from side to side, with a convexity of one inch in profile, the whole very slightly tilted backward. The maximum convexity lies one-third the way up, and when properly adjusted comes about opposite, or a little above, the fourth lumbar vertebra. The profile is shown in Fig. 1. This support is carried on a light casting running in the groove of a single cast-iron upright attached to the back of the seat. A set-screw fixes the height after adjustment.

Seats have been manufactured from these models in two sizes, and are used with the adjustable desk and seat castings that provide for height adjustment. As the matter stands, the new furniture provides a seat adjustable for height, with the new back-rest also adjustable for height, and a desk likewise provided with a vertical adjustment. A part of the seats used have also the forward and back adjustment for a fixed plus or minus distance. The seat has a $\frac{1}{4}$ -inch slope, the desk a slope of $1\frac{1}{2}$ inches. Three sizes of desk, two sizes of seat, and two sizes of back-rests are

* All measurements given are for the large size.

used, permitting a full range of adjustment for all ages. The seats are set at a zero distance (*i.e.*, the back edge of the desk is vertically in line with the front edge of the seat).

Three of the new schoolhouses have been provided with this furniture, and we have had opportunity to see something of it in actual use to work out certain minor defects and to plan a scheme of adjustment for its permanent use with the changing classes.

In last year's report the writer emphasized the desirability of individual adjustment rather than adjustment by any scale. Such individual adjustment was carried out in various class-rooms of different grades by the writer. In other rooms the representative of the contractors who furnished the desks carried out the adjustment according to an arbitrary scale which determines seat and desk height according to the individual measurement from the floor to the bend of the knee in the sitting position. After this adjustment had been carried out the writer went over various rooms checking the result by individual adjustment according to the plan outlined in last year's report.

In a general way the adjustment by arbitrary scale gives results that may be called satisfactory. The error is usually under one inch, and this is probably a negligible quantity. There is no reason in calling for microscopic accuracy of adjustment to a theoretical rule; our aim is at most to furnish seats that shall favor normal attitudes and prevent strained ones. There appeared, however, three classes of cases in which the adjustment by rule was inadequate:

(a.) A few cases where there was an apparent error in the measurement for height of seat.

(b.) Cases where typical bodily proportions made the rule of no avail: these cases were a moderate proportion only, largely consisting of boys of the excessively long-limbed type.

(c.) Cases where there was a tendency to improper sitting posture, readily corrected by adjusting desk or seat in such fashion as to conform neither to the arbitrary or physiological adjustment.

The total of these three classes hardly exceeds 15 per cent.

With the experience gained this year the writer is prepared to combat very definitely the argument that adjustable furniture is too troublesome to adjust. It is very true that the individual "physiological" adjustment for each scholar in large school systems where classes change year by year is a very arduous task, but the solution seems clearly enough shown by this year's experience.

If each member of an incoming class be measured for the base measurement (floor to bend of knee in sitting posture), and the measure noted, the seat and desk can be adjusted after school hours according to the arbitrary scale.* When this is done, all that remains is the inspection by one somewhat expert in the matter, who can without much search and with little disturbance

* Automatic scales are obtainable which, when set to the proper seat height, give also a reading for the height of desk.

of school routine pick out for readjustment such cases as those mentioned above. In fact, it is not only possible, but curiously easy to stand at the teacher's desk and pick out those pupils whose attitude indicates something wrong.

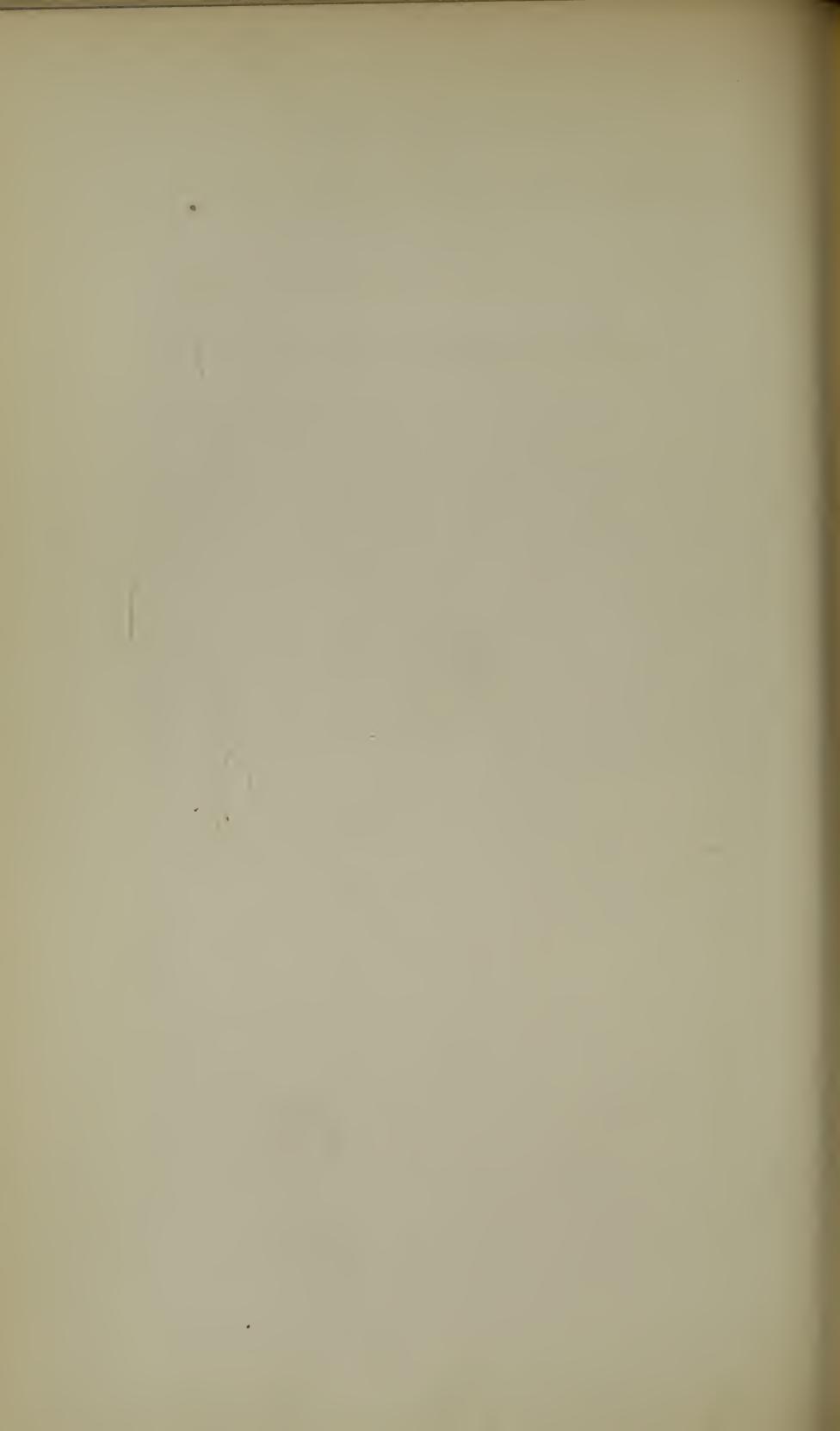
So far as the height of the back support is concerned, the writer has not tried to work out a rule of scale as yet; probably it will be possible to do this shortly. At present the sole criterion is that the maximum of forward curve (junction of the lower and middle thirds) shall come a finger's breadth above the level of the hip bone (ilium).

Certain defects have been noted — some of the very smallest children have had too much room between desk and seat. This can be remedied by using seats with antero-posterior adjustment, or may perhaps force us to set seats in the lowest grades at a slight minus distance. Certain of the larger girls more maturely developed need a back support of different slope to accommodate the hips; a casting with a small range of tangential adjustment at the bolt has been devised and will doubtless meet this need for the exceptional cases.

So far as this year has given opportunity to judge, the teachers are apparently well satisfied with the seating, from the point of view of class order and convenience. The present seating certainly represents a great improvement from a physiological and orthopedic point of view. To an extent the problem has been attacked *de novo*, and it is improbable that final results have been reached so soon, but considerable progress has certainly been made in the right direction.

Respectfully submitted,

F. J. COTTON, M.D.



THE ANNUAL REPORT OF THE SCHOOLHOUSE DEPARTMENT

FROM FEBRUARY 1, 1904, TO
FEBRUARY 1, 1905



BOSTON
MUNICIPAL PRINTING OFFICE
1905

recd

Boston Board of Schoolhouse Commissioners
May 26. 1905.



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BUILDINGS IN CHARGE OF SCHOOLHOUSE DEPARTMENT.

| | |
|---|-----|
| Number of Permanent School Buildings in charge of this
Department | 222 |
| Of the above, there are in use as storehouses, etc. | 5 |
| Number of Portable Buildings | 92 |
| Number of Hired Buildings | 24 |
| Giving Class-rooms to the number of | 44 |
| Number of New Buildings finished by Commission (includ-
ing Addition to Francis Parkman Schoolhouse) | 11 |
| Number of Buildings under construction at the present
time | 8 |

The forty-two items to which reference is made in the text is as follows :

- Item 1. West End. — Phillips and Wells District. In the vicinity of Norman street, a large grammar and primary school-house.
- “ 2. Roxbury. — Lowell District. In the vicinity of Heath and Day streets, a large grammar school-house.
- “ 3. Roxbury. — Lowell District. A six-room addition to the present Wyman Primary School-house.
- “ 4. East Boston. — Emerson District. In the vicinity of Byron street, a primary school-house.
- “ 5. Roxbury. — George Putnam District. In the vicinity of Atherton street, a primary school-house.
- “ 6. Roxbury. — Martin District. In the vicinity of Francis street, a primary school-house.
- “ 7. Dorchester. — Christopher Gibson District. In the vicinity of Bloomfield street (Dorchester Central), primary school-house.
- “ 8. Dorchester. — Roger Clap District. In the vicinity of the Edward Everett square, new grammar school-house.
- “ 9. South End. — Addition to Girls' High School site.
- “ 10. Dorchester. — New District on old Gibson School site, South street, large grammar school.
- “ 11. Charlestown. — New High School. Present lot to be enlarged.
- “ 12. South Boston. — Lincoln District. Tuckerman site, corner L and Fourth streets, new primary school-house.
- “ 13. South Boston. — Gaston District. A six-room addition to present grammar building.
- “ 14. South Boston. — Lincoln District. A four-room addition to the present grammar school building.
- “ 15. North End. — Eliot and Hancock Districts. On present Ware School lot, North Bennet street, a large school-house.
- “ 16. Back Bay. — Prince District. Southwest of Massachusetts avenue, grammar school-house.
- “ 17. Phillips Brooks District. A six-room addition to present Howard avenue School-house.
- “ 18. Dorchester. — Edward Everett District. A two-room addition to present primary school-house, Savin Hill avenue.
- “ 19. Mechanic Arts High School-house to be enlarged.
- “ 20. Normal School. In the vicinity of Dudley-street Transfer Station.
- “ 21. Girls' Latin School. In the vicinity of Normal School.
- “ 22. New district in the vicinity of Norman School, grammar and primary school-house.
- “ 23. Roxbury. — Hugh O'Brien District. East of the present George-street School-house, primary school-house.

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- Item 24. Roxbury. — Lewis District. In the vicinity of Perrin street, primary school-house.
- “ 25. Jamaica Plain. — Agassiz District. South of Forest Hills Station, grammar school-house.
- “ 26. Dorchester. — Mather District. On Meeting House Hill School site, grammar school-house.
- “ 27. Henry L. Pierce District. In the vicinity of Bailey street, primary school-house.
- “ 28. Dorchester. — Harvard-street District. Primary school-house.
- “ 29. Dorchester, — Edward Everett District. In the vicinity of Savin Hill avenue, primary school-house.
- “ 30. Washington Allston District. Present Brentwood-street site, grammar school-house.
- “ 31. Roxbury. — Dillaway District. A four-room addition to the present grammar school-house.
- “ 32. Roxbury. — Dillaway District. A four-room addition to the Bartlett-street School-house.
- “ 33. Dudley District. A four-room addition to the present Dudley School-house.
- “ 34. Roslindale. — Longfellow District. New primary school-house.
- “ 35. Dorchester. — Roger Wolcott District. Lauriat-avenue District, primary school-house.
- “ 36. Roxbury. — Dearborn District. Replace present Dearborn School-house with a new grammar school-house.
- “ 37. South Boston. — John A. Andrew District. Replace present Ticknor School-house with a new primary school-house.
- “ 38. East Boston. — Lyman District. Replace present Webb School-house with new primary school-house.
- “ 39. West Roxbury. — Robert G. Shaw District. In the vicinity of Central Station, primary school-house.
- “ 40. Dudley District. A four-room addition to the present William Bacon School-house.
- “ 41. East Boston. — Chapman District. Addition to present grammar school lot.
- “ 42. North End. — Hancock District. Addition to the present Hancock School lot.

REPORT OF THE COMMISSIONERS.

HON. PATRICK A. COLLINS,

Mayor of the City of Boston :

DEAR SIR, — In accordance with the provisions of chapter 473 of the Acts of 1901, the Board of Schoolhouse Commissioners submit herewith their third annual report, covering the period from February 1, 1904, to February 1, 1905.

I.

POWERS OF THE BOARD.

Under the act (chapter 473 of the Acts of 1901) provision was made for the issue of bonds during the year 1901 and the three succeeding years (p. 5, first annual report). The amounts thus authorized are available for three distinct purposes, and for no other work. These are, first, the list of forty-two items;* second, new sanitation, including heating and ventilation of the old buildings; third, better means of egress, in case of fire, from the old buildings.

The present year, 1904, is the last year covered by the loans authorized by chapter 473 of the Acts of 1901 and chapter 386 of the Acts of 1902; it seems, therefore, a proper time to make to your Honor a statement of how this money, thus provided, has been expended.

According to the provision of the act there were forty-two items, the cost of which was to be met by this act, and these items were supposed to represent accommodation needed up to January 1, 1902. Of the total list, twenty-nine have been undertaken by the Board, and are either completed or in process of completion, and of the remainder, every item has been either met in other ways or has been

* See index in front.

partially undertaken by the purchase of land. These twenty-nine items are as follows: Items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 17, 18, 23, 24, 25, 26, 27, 28, 30, 36, 37, 38, 41, and 42. These items, with what has been expended on the other thirteen, will practically exhaust the appropriation.

Of the thirteen that are not complete, four — Nos. 31, 32, 33, and 40 — were found impracticable, and their needs have been met by enlarging the other items in this neighborhood. The figures of attendance will show that the children of these districts are now accommodated. These may, therefore, be considered attended to. Two items — Nos. 16 and 21 — represent the same accommodation, the Model School for the Normal filling the needs of the Prince District, which latter is not a pressing necessity; the land is purchased for this building. Item 29, as explained in the accompanying statement, has been taken care of by Item 18, and may be considered complete. Item 34 has been set aside as not an immediate necessity, and the same applies to Item 35. Item 39 the Board propose to take up and execute in their own office, but have not as yet begun upon it.

It appears, therefore, that the items not as yet provided for are all connected with higher education — the Mechanic Arts High, the Charlestown High, the Normal and Girls' Latin. For all of these the land has been purchased. Every grammar and primary need has been actually filled.

It remains, therefore, for the Board to explain to your Honor why they have been unable, with the appropriation provided on the lines of their own recommendation, to complete all the items on the list.

The act referred solely to the condition of the city at the end of 1901, and contemplated an annual appropriation to meet the yearly increase. The Board deemed it inexpedient and uneconomical to attempt to meet current growth by additions to existing school buildings which, in construction, heating and sanitation, were not up to the standard of modern school buildings. They believed it wiser to erect, to meet such needs, buildings which were in every respect first-class in structure and equipment. Such schools are permanent investments for the city, and as such the city government believed they should be paid for out of loans, rather than out of the direct annual tax levy, and, therefore, during the three years of the Board's existence, no such appropriation has been made from taxes.

Under these circumstances it has seemed both wise and economical to increase the accommodation in each case to meet

not merely the needs existing in 1902, but also those additional needs existing at the time of the erection of the building. In all cases this has been done, and the Board in so doing have acted in accordance with the advice of the Superintendent and of the School Committee, as well as in accordance with their own best judgment. If this had not been done, thousands of children would now be without school accommodation. In this way each item, where continued growth has occurred, has been increased to meet this growth. The first item read, "A large grammar and primary school-house," and this was made the largest in the city. Items 13 and 14, mere additions to existing buildings, giving 10 rooms, resulted in a complete new grammar building of 14 class-rooms and the land therefor. The "large" grammar school on the Gibson site (and by "large" a building of 14 to 18 rooms was meant) resulted in a 24-room building; the large primary on the Ware lot in another 24-room building. The "grammar" on Meeting House Hill developed into a 32-room building, the largest now in the city — and so with nearly all the items. This increase in the size of each item was then one reason why the Board were unable to complete the full list.

Another reason was the cost of land. In many cases the price finally paid by the city not only exceeded the amount contemplated originally by the Board, but exceeded also the amounts named to the Board by brokers and owners. Moreover, in response to a growing demand, the Board have thought it right to purchase enough land in all cases to provide suitable grounds around the buildings, and in all cases the building contracts have covered the complete finishing and planting of these grounds. The purchase of land being a matter over which the Board have no control, it was impossible for them to estimate accurately the necessary expenditure. It will be noted, however, that in all possible cases they have avoided enlargement of old lots (see Items 31, 32 33 and 40), where it is almost hopeless to control the price, and have utilized existing lots rather than purchase new land.

A third reason is the large amount of money spent in response to urgent need in replacing old and unsanitary systems of plumbing and heating with new and first-class plants. Seventy-two schools have been given new plumbing systems, or have had the old systems put in good repair, at a cost of \$467,318.04, and fifteen schools have had their heating and ventilating systems put in thorough order at a cost of \$127,065.57.

These are the three principal reasons to account for the

inability of the Board to accomplish all that was contemplated by the list, and to these may perhaps be added another, namely, the inexperience of the Board when first established. The work of the Board is extremely complicated and by no means easy, and there was no data to serve as a guide to what school buildings of given accommodation should cost.

When it became clear that the Board would be unable to complete the full list within the appropriation, they decided to omit the items connected with the higher branches, feeling that their first duty was to provide accommodation for the younger children. Thus the original appropriation was exhausted.

Under these circumstances, and believing as they do that there may reasonably be two different opinions as to how money should be raised for new school buildings, the Board have asked the Legislature that the city be authorized to borrow within the debt limit the money necessary to complete the original list, that is the High School and Normal items, and to provide for new buildings to accommodate the increasing population. They have asked for \$1,000,000, in 1905, and \$500,000 a year in 1906, 1907 and 1908. If this bill passes, it does not in any way interfere with the city's power to raise by direct taxation the amount available according to law. The city will have the option of raising about \$500,000 a year by taxation, or borrowing the amounts stated above, or doing both, as the need may appear, or as the city may determine its policy.



MARSHALL SCHOOL,
Westville Street.
MAGINNIS, WALSH & SULLIVAN, Architects.

II.

WORK EXECUTED UNDER THE APPROPRIATION FOR
LAND AND BUILDINGS FOR SCHOOLS.

The work done thus far by the Board will be considered under four heads:

1. A critical review of buildings completed and occupied.
2. Report of progress on the buildings described last year and on the new buildings undertaken since then.
3. Report on sanitation installed.
4. Report on fire protection.

(1.) A CRITICAL REVIEW OF BUILDINGS COMPLETED
AND OCCUPIED.

Of the buildings reported in the first two reports, seven described in the first report and three in the second report have been completed and occupied for a sufficient length of time to make criticism possible. These are as follows, in the order of occupation: 1, Marshall School; 2, William E. Russell School; 3, Farragut School; 4, Paul Jones School; 5, Ellis Mendell School; 6, Jefferson School; 7, Christopher Columbus School; 8, Francis Parkman School (addition); 9, Washington School; 10, John Boyle O'Reilly School.

In criticising these buildings we propose to examine their accommodation, cubic contents, and cost per pupil in the light of the present knowledge of the Board; to point out deficiencies in plan or arrangement which we believe can now be remedied and are remedied in the later buildings; to note where they have proved unsatisfactory from the point of view of the masters, and, finally, what has been learned in domestic engineering by the experience of these buildings.

In the second annual report, page 23, it was pointed out that the cubic contents of a primary school could be fixed between 30,000 and 35,000 feet per room, and of a grammar between 40,000 and 45,000. The cubes are calculated from a foot below the cellar grade up to and including the roof. The cost includes the general contract, heating, ventilating, the complete electric equipment, and grading, planting and fencing the grounds.

From this may be calculated the cost per pupil, which is based on 50 pupils to a room, although a standard room seats 56. There are, however, in many of the large schools,

ungraded and other classes which are even below 50, and consequently this figure is taken as a fair average. In the light of the more recent experience of the Board they figure that, as between a large and small primary building, the cost per pupil might rightly vary from \$132 to \$154; that between a large and small grammar the cost per pupil might vary from \$176 to \$198.

1. *The Marshall School.* Primary in the Christopher Gibson District. M. E. Fitzgerald, Master.

This building has but twelve rooms above the basement, but, counting the two unfinished basement rooms and rating this at 700 children, the figures show that it cost \$23.81 per pupil above the high limit. The cube is 516,624, the cost \$124,467.65, or 24 cents per cubic foot, and \$177.81 per pupil. At 35,000 cubic feet per room and 22 cents, it should have cost but \$107,800 for fourteen rooms. Its cost was wholly due to a large kindergarten annex, which we should not now feel justified in building on such a scale in any primary building.

It may further be added that the building is not strictly first-class, the roof being of wood frame. After a year's occupation, the master has but one criticism to make — one staircase is not well lighted in the basement. This is a defect which is inexcusable on a completely open lot.

In making notes on the heating of the seven buildings first erected, it will be remembered that all these buildings had been laid out by the architects before the Board appointed the engineers to have charge of this work, and the architects and engineers did not therefore have the opportunities which were afforded them later of working together from the outset.

The Marshall School, situated on a hillside, had its kindergarten located on a lower floor. The rest of the building being compact and small was furnished with a gravity system. As this could not take care of the kindergarten satisfactorily, a fan was placed for the latter. Here, as in all cases where we have installed gravity systems, we have hand control, but we are experimenting at present to determine whether it is practical to control such a system with automatic mixing dampers. If a gravity system can be controlled automatically, as a fan system can, it would certainly be the preferable system for the small and more compact buildings. The cold air inlet was not sufficiently carefully placed and safeguarded against the admission of dust and wet, an important consideration in any system.



WILLIAM E. RUSSELL SCHOOL,

Columbia Road.

JAMES MULCAHEY, Architect





FARRAGUT SCHOOL,
Huntington Avenue and Kenwood Road.
WHEELWRIGHT & HAVEN, Architects.

2. *The William E. Russell Grammar School.* Edwin T. Horne, Master.

This building rates at 900 children, and it costs \$11.47 per pupil more than the highest limit, although, like the Marshall, the roof is not first-class, and two rooms are not full size. The cube is 894,941; the cost, \$188,524.56, or 21 cents per cubic foot, and \$209.47 per pupil. The outside limit of cubic contents should have been 810,000, and a building of this size should have come nearer the low limit, 720,000. Its excess of cubic contents was partly offset by the simplicity of the exterior and the second-class construction referred to above. With the present system the excess of cube would have been detected and corrected in the preliminary drawings.

The master believes that a more careful study of the grades and the sewer at the outset would probably have resulted in raising the basement floor and freeing from dampness, and the boiler-room from danger of backwater. The engineers of the Board now make careful examination of all such matters, report to the architects and confer with them, so that such errors may be avoided; but it is doubtful whether in this case it would have been desirable to have raised the building higher than it now is above existing grades.

The heating system is gravity, with hand control. Some difficulty has been experienced with the boilers, which is due either to their being of such size as to require to be forced in extreme weather, or else to insufficient draft in the boiler flue. The boilers adopted here were as large as could be placed in the space at our disposal, and experiments will be made when the fires are drawn to see whether lack of draft is the real difficulty.

3. *The Farragut School.* A primary in the Martin District. W. L. Murphy, Master.

This building compares with the Paul Jones, being a twelve-room primary with manual-training room and cooking-room in basement, and is therefore for these figures rated as a fourteen-room primary. The two basement-rooms are, however, not as well above grade and as well lighted as at the Paul Jones, and therefore not so well fitted for regular class-rooms. This is the most expensive building the Board have erected, owing, not to the excessive cost per cube, but to the excessive cube. This is due, first, to the single unit plan. The corridor runs the whole length of the building and serves rooms on one side only, making a wasteful area; and, second, the unnecessary height between ceiling and roof.

The cube should have been not over 490,000, and the cost \$107,800. The cube is 652,630 and the cost \$150,526.43, or 23 cents per cubic foot and \$215.04 per pupil, and yet the roof is not entirely fireproof construction.

This plan, like the Ellis Mendell, was an experiment; in this case, an attempt to build on a noisy thoroughfare and have the rooms face on the yard where they would be comparatively free from the sun. The architects here worked under the theory that sun should be excluded from classrooms for the benefit of eyes; the architects of the Ellis Mendell were endeavoring to give all their rooms a sunny aspect. The Board now favor some sun in every class-room, but would not think of going to any considerable expense to gain this point. They certainly would not spend money to avoid the sun. It is needless to say that the cost of the Farragut need never again be duplicated. Irrespective of the extravagance of the plan, the corridor being on the lot line is inadequately lighted.

Mr. Rafter, now one of the supervisors, but the former master of the Martin District, criticises quite rightly the light in the cooking-room and manual-training room, which should be as good as that in any class-room. The master criticises the lack of light in the corridors already referred to. Except for its cost and these minor defects, the Board consider it one of the best of the new primaries.

This building has a low pressure gravity return steam apparatus, and the air is handled by means of a fan, primary and supplementary radiators, controlled automatically, the fan run by an electric motor. Ordinarily it is more economical in a pressure system to have the power for the fan from an engine rather than from an electric motor, but in this case the motor seemed the only feasible method in the space that was available for it, without making radical changes in the plan; also, owing to the fact that the plans were practically complete when the engineers were appointed, it was not possible to put the supplementary coils immediately under the room at the Huntington avenue end, but instead they are some fifty feet removed from the vertical, and, whereas the other rooms warm quickly, these do not.

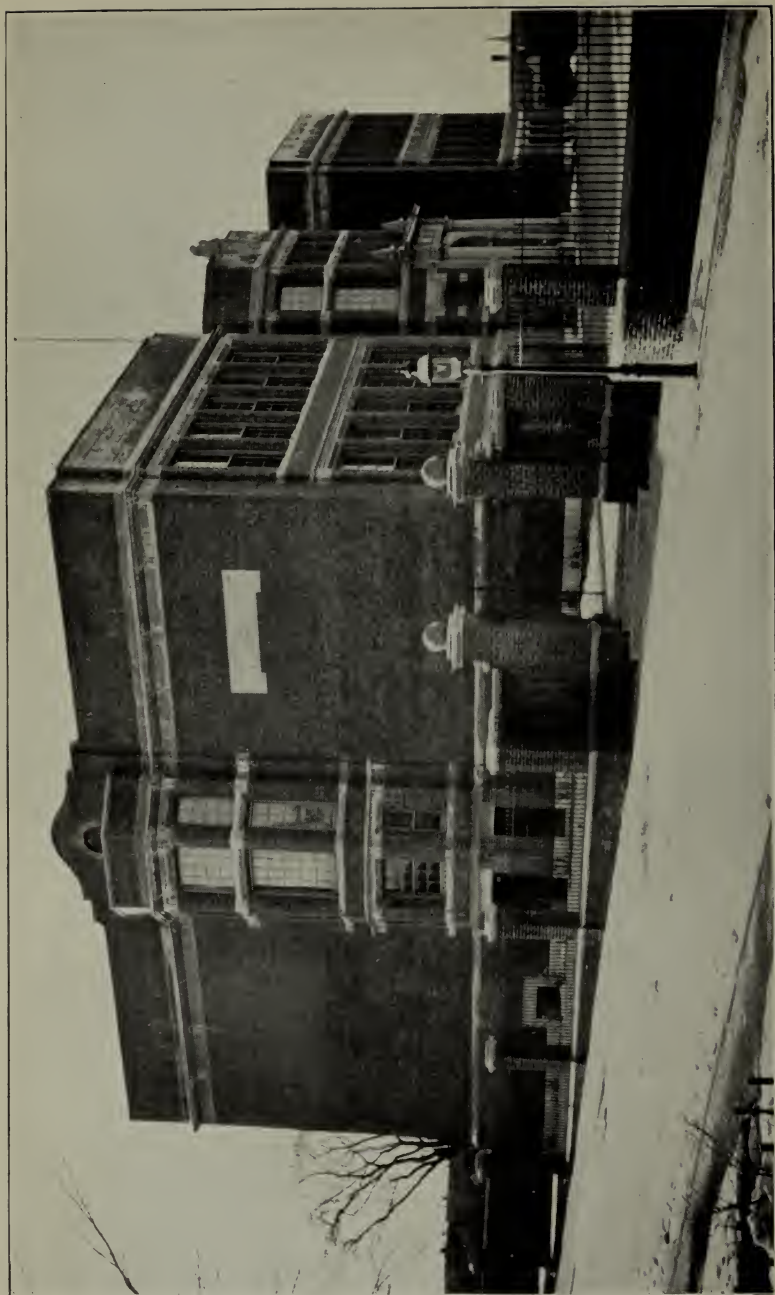
The cost of the electric motor instead of an engine, and the trouble with the rooms above named, would both be avoided under the present system, where the architects and engineers consult together from the outset.

4. *The Paul Jones School.* Primary school in the Blackinton District. H. L. Morse, Master.



PAUL JONES SCHOOL,
Horace and Byron Streets.
WHITMAN & HOOD, Architects.





ELLIS MENDELL SCHOOL,
School Street.
ANDREWS, JAKES & RANTOUL, Architects.

This school, although erected as a primary, has a manual-training room and a cooking-room in the basement, and is therefore counted as having 14 rooms. Both cube and cost per cubic foot are excessive — the cube 510,386, the cost \$114.370.35, or 22 cents per cubic foot and \$163.39 per pupil. At 35,000 and 22 cents, this cube should have been 490,000, and the cost \$107,800. This building is, however, first class, entirely fireproof, and consequently can be directly compared with the later buildings, which are all first class. Study in the preliminary stage would have resulted in a more compact plan.

The criticism of the master refers first to the lack of doors on water-closets and partitions in the urinal. This matter is fully discussed in the second report, page 12. There is no janitor's room, and there is an unnecessary amount of toilet accommodation above the basement. Both of these are just criticisms.

The Paul Jones has a low-pressure gravity system with hand control. To free the basement space the boiler-rooms were placed in a sub-basement, a somewhat expensive method of installing, and one which we should not now feel justified in employing, except under unusual circumstances. The building being small and compact, the system has worked satisfactorily.

5. *The Ellis Mendell.* A primary school in the George Putnam District. Henry L. Clapp, Master.

This building was an experiment in that the toilets were distributed about equally on the three floors. It means an increased floor area and cubic contents. Its only advantage lies in freeing the basement. In addition to the area added by the toilets above the basement there is a third staircase, which appears to be unnecessary. The figures show how expensive this plan is, for it figures 517,035 cubic feet, when the outside limit for a 12-room primary should have been 420,000, and should have cost but \$92,400. The cost was \$122,267.20, or 23 cents per cubic foot and \$203.78 per pupil. The distribution of toilets and third staircase would not be tried again.

The master has no criticism to make of this building as regards its operation and the administration of the work. From his point of view it has proved a satisfactory plan.

The heating apparatus is practically the same as that in the Paul Jones, except that it is in the basement and not in a sub-basement. It has given satisfactory results.

6. *The Jefferson School.* A grammar school. Edward P. Sherburne, Master.

The Jefferson has quite an ideal second floor plan. In each room the window wall is a glass and iron screen, giving splendid light. Architectural design, however, was allowed to influence the first floor, where the glass area was equally important, with the result that either the second floor has too much glass (with the consequent ill effects in cold and heat), or the first floor too little, while the second floor glass and iron scheme carried through to the assembly hall gives an amount of glass quite unnecessary and undesirable for that room. It is not, therefore, a good plan throughout.

The cube of the building, 856,777 cubic feet, is but just over the outside limit, but the cost, \$210,890.49, or \$221.99 per pupil and 24 cents per cubic foot, is 2 cents too high per cubic foot, and the cost per pupil \$23.99 in excess of the outside limit. A building of this size ought to be nearer the low limit than the high one, and the cost should be in the neighborhood of \$180,000. The site was practically all rock and had to be blasted, which accounted in part for the cost, but the real trouble lay in the area, *i.e.*, width of corridor, and the iron and glass exterior construction. The building has proved very satisfactory.

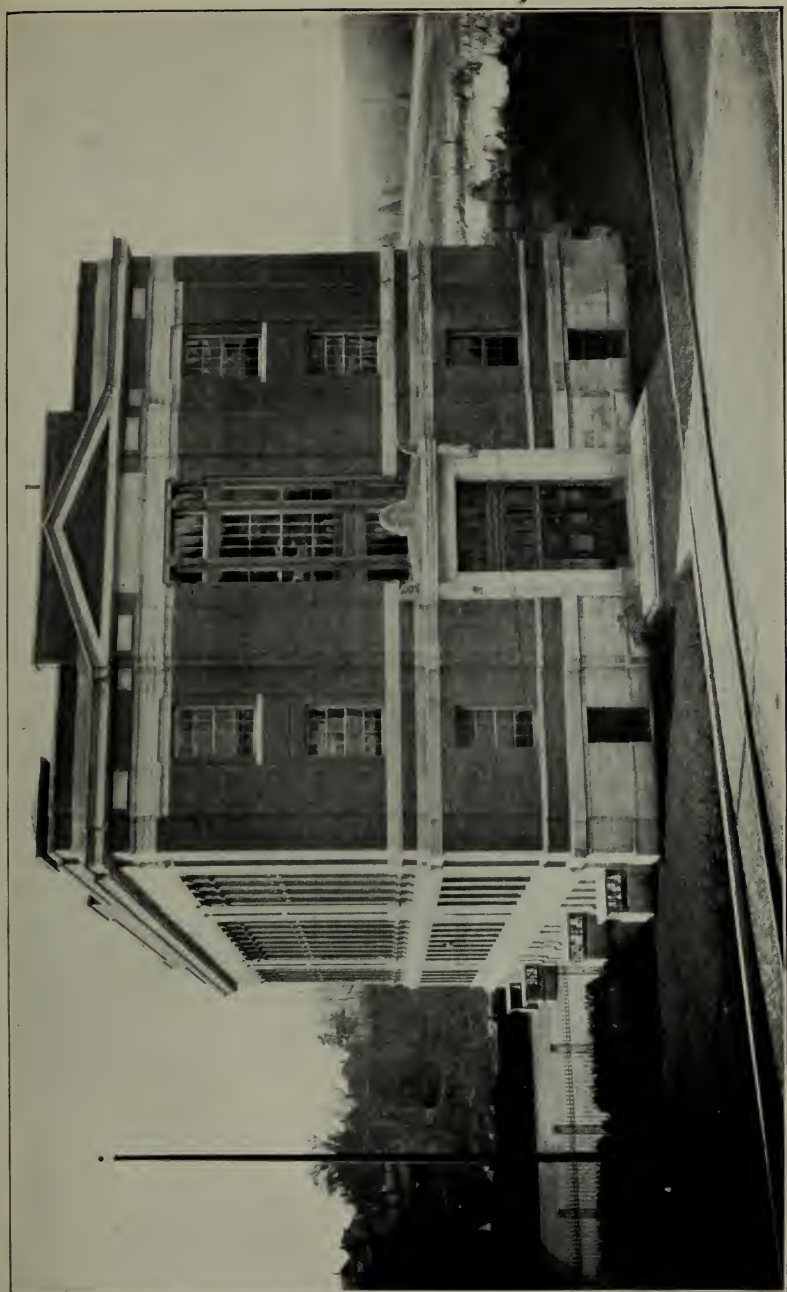
The only criticism of the master is that, owing to the space occupied by the manual training and cooking in the basement, insufficient space is left for the play-rooms. A common play-room had been planned, but as a matter of administration the master reserves this for the girls, and the boys are obliged to stay outside until the school is opened. The Board consider it an open question as to whether or not it is possible to make a common play-room satisfactory in the point of view of administration.

This building is equipped with a low-pressure gravity system with hand control, and has given general satisfaction.

7. *The Christopher Columbus School.* A primary in the Eliot District. Granville S. Webster, Master.

This is the first new building designed after the Board had established a proper relation between the floor area of class-rooms and the building as a whole. This, it will be seen by the first report, was the first check which the Board had on the plans themselves to indicate whether or no they were economical. The second check, which fixed the proper cubical contents as given in the second report, had not yet been arrived at.

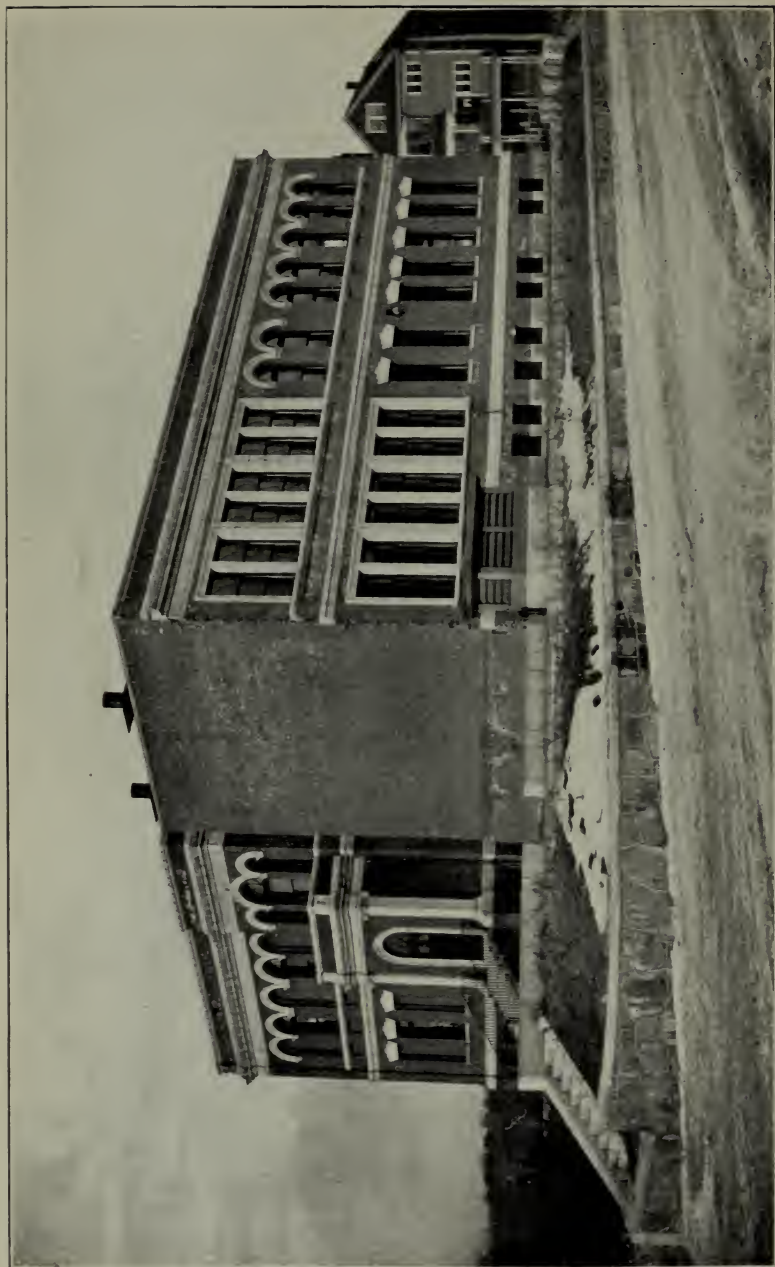
This building is a straight primary, except for the fact



JEFFERSON SCHOOL,
Heath Street.
SHEPLEY, RUTAN & COOLIDGE, Architects.



CHRISTOPHER COLUMBUS SCHOOL,
Tileston Street.
WINSLOW & BIGELOW, Architects.



FRANCIS PARKMAN SCHOOL,
Walk Hill Street.
CHARLES B. PERKINS, Architect.

that two class-rooms on the top floor have had the partition dividing them omitted, and are at present being used for manual training. It is rated as a 24-room building, and the cube, at 30,000 per room, would have been 720,000, and the cost at 22 cents, \$158,400. This was the extreme low limit. The actual cube was 727,068, and the cost \$173,512.08; a price of 23 cents per cubic foot and of \$144.59 per pupil, about half-way between the two limits.

The master finds nothing to criticise in this school, and from the point of view of the Board it conforms accurately to its standards in every respect.

A heating plant was installed in this school sufficient for the new building and also for the adjoining 14-room grammar school building, the Eliot. This would account in part for the fact that the building over-ran the low limit.

The building is equipped with a gravity system with hand control, similar to the Paul Jones and the Ellis Mendell. With the exception of certain troubles connected with the early running of the apparatus, this system has worked satisfactorily.

8. *The Francis Parkman School.* An 8-room primary in the Agassiz District. John T. Gibson, Master.

This building, being an addition to an existing one, is not of first-class construction, but second-class, to correspond with the old. A special criticism of the building, either of its cost or accommodation, would, therefore, not be germane to this subject.

9. *The Washington School.* A grammar school. Walter L. Harrington, Master.

Theoretically this grammar building should have been one of the economical ones, for, instead of having the usual play-rooms and assembly hall, these two are combined, and, located as it is, it has no grounds to be planted and but very little yard-room. To offset this, however, it has a small gymnasium, not usual in grammars, and a roof-garden. Moreover, being four stories, it has three staircases and a lift, and two of the staircases are the twin type, which necessitate higher stories for head room. The wide corridors, the irregular plan, the extra height of the stories, and the three staircases would readily account for the excess in cube. It is rated at 30 rooms, and should have been near the low limit of 1,200,000 cubic feet, instead of which it is but just under the high limit of cubic contents, and cost two cents above the limit. The cube is 1,300,792, the cost \$325,541.60, that is, 25 cents per cubic foot, and \$217.03 per

pupil. It is doubtful whether we would again attempt a play-room and assembly hall combined, and it is certain that the cramped, necessarily close, and certainly confusing twin staircases do not commend themselves. As far as the roof playground and the gymnasium are concerned, we believe these to be money well spent. It will always cost somewhat more to build high in a congested district than to build a few stories on a large lot, and with the economies that might have been effected this building could have been brought down to the higher limit.

The master quite rightly criticises the twin stairs. He criticises the ground-floor assembly hall in that the low temperature and draughts incident to its being a thoroughfare from out doors make it unsuitable as a hall, and it is, of course, not ornamental. The window sashes are too large to make tight, unless they are very heavy. The most important criticism is that in the building designed for primary and grammar children, the primary are on the lower floor (to avoid stairs), and it is difficult to protect the little ones unless dismissed earlier. The master suggests vertical division, and separate entrance and stairs. The master's office should be nearer the grammar grades. An emergency toilet on the first floor is not needed. Rails on the staircases are not used, and might well be omitted, certainly wall rails. With all these criticisms the Board agree.

This building is equipped with boilers designed to run at thirty pounds pressure during school hours, and arranged with return tanks and pumps. It is also arranged to return by gravity to the boilers when school is not in session. The air is handled by means of fan and steam engine, the exhaust steam being utilized in the heating system. There are primary and supplementary heaters, controlled automatically. The records of the system generally show fairly even temperatures in the various rooms.

The difficulties of the so-called assembly hall, or ground-floor play-room, have already been pointed out. As a play-room, there was no need that the temperature should be over 60 degrees; as an assembly hall, a higher temperature was a necessity. When the building was designed it was thought that its use as an assembly hall in the day time would be for but limited periods, and that if used in the evening for the work of Educational Centres the heat would not be needed in the class-rooms and could be concentrated here. The plans as laid out by the architects before the engineers were appointed had provided a very cramped,



WASHINGTON SCHOOL,
Norman Street.
EVERETT & MEAD, Architects.

THE ANNUAL REPORT OF THE SCHOOLHOUSE DEPARTMENT

FROM FEBRUARY 1, 1904 TO
FEBRUARY 1, 1905



BOSTON
MUNICIPAL PRINTING OFFICE
1905





JOHN BOYLE O'REILLY SCHOOL,
Dorchester Street.
ANDREWS, JAKES & RANTOUL, Architects.

insufficient and ill-lighted space for the boilers, engine and fan, and the utilization of the ground floor necessitated furring down a large space for the ducts and supplementary radiators, which are therefore not as accessible as they should have been, and the pipes and valves for which injure the appearance of this basement. With the exception of the heat of this assembly hall and the lack of ventilation in the twin staircases, the system, though complicated and cramped, is working fairly satisfactorily.

10. *The John Boyle O'Reilly School.* A primary in the John A. Andrew District. Joshua M. Dill, Master.

This building has 14 rooms, one room on the first floor being temporarily occupied for manual training. At 35,000 cubic feet per room, the high limit for a small primary, and at 22 cents, it would have cost \$107,800, and the cube would have been 490,000. Its actual cost was \$112,713.50, the cube was 450,248; it cost 25 cents per cubic foot and \$161.02 per pupil, that is, \$7.02 above the high limit. This, we believe, was due entirely to the fact that the building was executed in a very short time, under a heavy bonus and forfeit contract, only eight months being allowed for its erection, and the contractors figuring on additional expense in pushing the work, and the probable additional expense of having to pay some days' forfeit. The building was completed within a week of the time set.

The John Boyle O'Reilly has a heating system similar to that of the Christopher Columbus, and is giving satisfactory results.

On the whole, it will be seen in the report on these nine schools that the gravity systems have given fairly satisfactory results. They are economical to install and economical to run. They depend, however, far more than any automatic control system, upon the intelligence and watchfulness not only of the janitor, but of all the teachers, and each room is liable to be affected by the personal predilection of the teacher as to the temperature which may seem to him or to her right. The temperature records in such schools will not, therefore, show the uniformity which is found in a fan system with automatic control.

Appended is a schedule of grammar and primary schools erected by the Board, showing the cost per pupil:

GRAMMAR SCHOOLS.

| | Accommodation. | Date of Contract. | Cubic Contents. | Cost. | Cost, Cubic foot. | Cost per Pupil. |
|------------------------------|----------------|-------------------|-----------------|--------------|-------------------|-----------------|
| Item 8, Wm. E. Russell..... | 900 | Aug. 25, 1902, | 894,941 | \$188,524 56 | \$0 21 | \$209 47 |
| " 1, Washington | 1,500 | Dec. 6, 1902, | 1,300,792 | 325,541 60 | 25 | 217 03 |
| " 2, Jefferson..... | 950 | Jan. 27, 1903, | 856,777 | 210,890 49 | 24 | 221 99 |
| " 26, Mather..... | 1,600 | Sept. 29, 1903, | 1,353,831 | 288,380 46 | 21 | 180 24 |
| " 30, Thomas Gardner..... | 700 | Jan. 30, 1904, | 735,573 | 142,718 37 | 19 | 203 88 |
| " 13 } Oliver Hazard Perry.. | 700 | Feb. 2, 1904, | 612,351 | 145,633 23 | 24 | 208 05 |
| " 14 } | | | | | | |
| " 10, Oliver Wendell Holmes, | 1,200 | May 21, 1904, | 991,609 | 188,326 47 | 19 | 156 94 |
| " 36, Dearborn | 1,050 | May 21, 1904, | 980,100 | 211,308 00 | 21 | 201 24 |

PRIMARY SCHOOLS.

| | | | | | | |
|-----------------------------|-------|----------------|---------|--------------|--------|----------|
| Item 7, Marshall..... | 700 | July 31, 1902, | 516,624 | \$124,467 65 | \$0 24 | \$177 81 |
| " 6, Farragut | 700 | Dec. 17, 1902, | 652,630 | 150,526 43 | 23 | 215 04 |
| " 4, Paul Jones..... | 700 | Jan. 7, 1903, | 510,386 | 114,370 35 | 22 | 163 39 |
| " 5, Ellis Mendell..... | 600 | Jan. 27, 1903, | 517,035 | 122,267 20 | 23 | 203 78 |
| " 15, Christopher Columbus, | 1,200 | July 16, 1903, | 727,068 | 173,512 08 | 23 | 144 59 |
| " 37, John Boyle O'Relly... | 700 | March 2, 1904, | 450,248 | 112,713 50 | 25 | 161 02 |
| " 23, Samuel W. Mason..... | 700 | June 22, 1904, | 438,223 | 118,851 00 | 27 | 169 79 |
| " 27, John G. Whittier..... | 500 | July 27, 1904, | 325,051 | 72,269 70 | 22 | 144 54 |
| " 38, James Otis..... | 600 | Oct. 7, 1904, | 411,645 | 106,991 00 | 26 | 178 32 |

It will be seen from the list that the first three grammar schools exceeded the largest limit. This was due simply to the inexperience of the Board, in not being able to instruct the architects as to the necessary reduction in the plans. Of the five erected since that time, one is below the lowest limit, one is just above the lowest limit, and three exceed the limit. These three the Board explain as follows:

Items 30 and 36 were buildings not entirely complete, and when the additional class-rooms are built the entire building will come within the limit.

Items 13 and 14 very slightly exceed the limit, due to the

fact of expensive foundations and the very large lot to be graded and planted.

In the primary list it will be seen that the first four items seriously exceed even the outside limit, due, as in the case of the grammar buildings, to the Board's lack of experience which would enable them to determine just where the need-less extravagance was. The last five have been executed since this time, and, of these five, three are within the limit and two exceed the limit, one by \$10 and the other by \$18. The excess of Item 23 is due to an expensive piled foundation and a lot large enough to accommodate two schools, all of which is graded and planted. The excess of Item 38 is due to still more expensive foundations and to a very short time limit and a heavy forfeiture contract.

(2.) REPORT OF PROGRESS ON THE BUILDINGS DESCRIBED LAST YEAR AND ON THE NEW BUILDINGS UNDERTAKEN SINCE THEN.

In the previous section, ten of the schools completed and occupied have been reported upon. In addition to these, progress has been made as follows on the other items reported upon last year:

Item 26. A large grammar school on Meeting House Hill. It has been given the old name and will in future be known as the Mather School.

The date of completion has been twice extended for cause to January 27. It was not completed on that date, and the city will have a claim for damages. The contracts are not closed.

| | Original Contracts. | Amount of
Contracts to date. |
|------------------------|---------------------|---------------------------------|
| General Contract . . . | \$228,395 00 | \$240,628 96 |
| Heating " . . . | 25,795 00 | 27,357 00 |
| Plumbing " . . . | 10,617 00 | 11,634 50 |
| Electric " . . . | 7,490 00 | 8,760 00 |
| | <u>\$272,297 00</u> | <u>\$288,380 46</u> |

The greater part of these additions to the contracts is on account of four additional rooms which have been finished in the basement.

With a rated accommodation of 1,600, and at the low limit for grammar schools, 40,000 per room, its size would have been 1,280,000 cubic feet, and the cost at 22 cents would have been \$281,600. The actual cost is slightly above this, but we have space for four more rooms, which could be finished at a cost of \$12,000.

Item 10. A large grammar school on the old Gibson site has been named the Oliver Wendell Holmes School. Plans for a twenty-four room building were completed by Mr. Longfellow and the building was let in four contracts. The cost to date compares with the original contract prices as follows:

| | Original Contracts. | Amount of
Contracts to date |
|------------------------|---------------------|--------------------------------|
| General Contract . . . | \$150,325 00 | \$152,211 47 |
| Heating " . . . | 21,970 00 | 21,970 00 |
| Plumbing " . . . | 7,659 00 | 7,701 00 |
| Electric " . . . | 6,444 00 | 6,444 00 |
| | <u>\$186,398 00</u> | <u>\$188,326 47</u> |

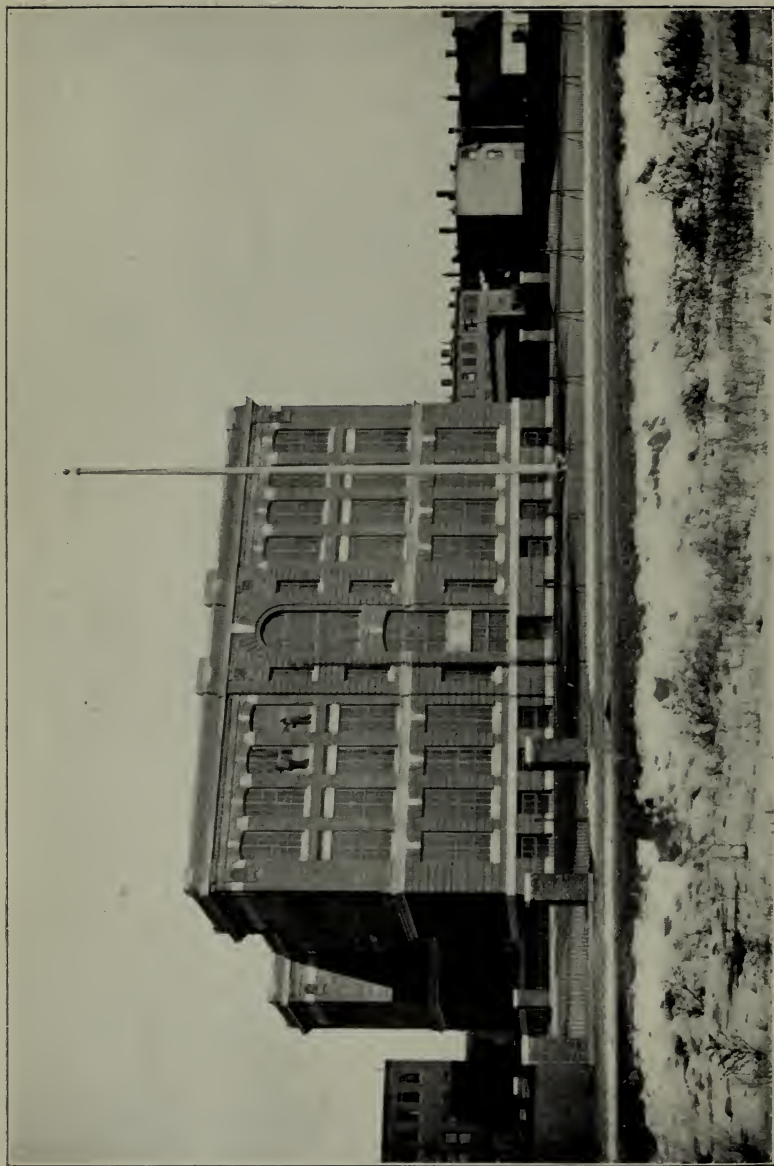
The contracts did not include the complete grading of all the grounds, as these could not very well be taken care of while school was going on in the old buildings, but even with the possible addition of seven or eight thousand to the general contract, this building will still remain the most economical that has yet been put up by the Board. With a rated accommodation of 1,200, and at the low limit for grammar schools, 40,000 per room, its size would have been fixed at 960,000 cubic feet, and the cost at 22 cents would have been \$201,200. Its actual completed cost will apparently be well within \$195,000, and therefore below the lowest limit that we had thought possible.

The building was let in May, 1904, and is to be completed in fourteen months, or August 1, 1905. The work has progressed smoothly and will probably be completed on time.

Item 36. The new grammar building on the Dearborn lot takes the old name and will be known as the Dearborn School. The building was let in four contracts, and the cost to date may be compared with the original contract prices as follows:

| | Original Contracts. | Amount of
Contracts to date. |
|------------------------|---------------------|---------------------------------|
| General Contract . . . | \$188,888 00 | \$176,742 00 |
| Heating " . . . | 20,494 00 | 20,494 00 |
| Plumbing " . . . | 8,175 00 | 8,175 00 |
| Electric " . . . | 5,897 00 | 5,897 00 |
| | <u>\$223,454 00</u> | <u>\$211,308 00</u> |

This is a twenty-one room building, but is so planned as to make an addition of twelve rooms possible. The building was let in May, 1904, and is to be completed the first of July, 1905. Very bad conditions were encountered in the foundations, but it is hoped that the work will be completed



OLIVER HAZARD PERRY SCHOOL,
East Seventh Street.

CLOUGH & WARDNER, Architects.
Occupied in January, but not criticised for this Report.

on time. The building is rated at an accommodation of 1,050; at the outside limit, this would allow 945,000 cubic feet, which at 22 cents would give a cost of \$207,900. The cube is in excess of this, 980,100, and the cost is in excess of 21 cents. This is due to extremely expensive piled foundations, a very difficult lot on which to do the work, and the fact that the building is planned with its assembly hall and space for a heating apparatus to take care of twelve more rooms, and when these are all completed it is probable that the building will show the cost per pupil as low as the regular average, although at present it shows an excess of \$3.24 per pupil over the high limit.

Item 30. This building has been named the Thomas Gardner School. The cost to date compares with the original contract prices as follows:

| | Original Contracts. | Amount of
Contracts to date. |
|------------------------|---------------------|---------------------------------|
| General Contract . . . | \$114,730 00 | \$116,272 93 |
| Heating " . . . | 15,965 00 | 15,934 44 |
| Plumbing " . . . | 5,919 00 | 5,933 00 |
| Electric " . . . | 4,578 00 | 4,578 00 |
| | <u>\$141,192 00</u> | <u>\$142,718 37</u> |

This building is an incomplete grammar building, like the Dearborn, and has a portion of the basement built for a future addition. Its cube is therefore far in excess of the amount allowed for a building rated at 700 pupils only, which would be 630,000 cubic feet, and its cost should have been at 22 cents, \$138,600. The cube amounted to 735,573, but owing to its low cost per cubic foot, only 19 cents, the cost is only slightly in excess, \$142,718.37, and considering the amount of the future building that is already erected, and the completion of the large assembly hall, it makes a favorable showing. The building was let on January 30, 1904, and was to have been completed on February 1, 1905. It will not be finished on time, and the city will have a claim for damages.

Items 13 and 14. A new grammar school at City Point, was named the Oliver Hazard Perry School.

| | Original Contracts. | Amount of
Contracts to date. |
|------------------------|---------------------|---------------------------------|
| General Contract . . . | \$116,064 00 | \$117,912 23 |
| Heating " . . . | 17,462 00 | 17,674 00 |
| Plumbing " . . . | 4,850 00 | 5,094 00 |
| Electric " . . . | 4,941 00 | 4,953 00 |
| | <u>\$143,317 00</u> | <u>\$145,633 23</u> |

The building is rated at 700 pupils and 14 rooms, which at the high limit of 45,000 would give a cube of 630,000, and a cost at 22 cents of \$138,600. The cube was slightly less than this amount, but the cost per cubic foot slightly in excess, so that the price per pupil is \$10.05 above the high limit. This was due almost entirely to the very large area of the lot, all of which had to be filled, graded, partly paved and partly planted, and the amount of brick work necessary in connection with the walls on party lines.

The building was let in February, 1904, and was to have been completed on December 2, 1904. The time was extended for good reason to January 1, 1905, and the building was completed on January 2, 1905.

Item 38. The primary school in the Lyman District, which has been named the James Otis School. The Board, for what appeared to them sufficient reasons, closed their arrangement with Mr. John Lyman Faxon and appointed Messrs. Winslow & Bigelow architects of this school. Owing to the time lost in the preparation of the previous plans and the urgent necessity for the completion of the school, the building was let in a single contract, and under a short term and forfeit, on October 7, 1904, to be completed in eleven months. This seemed as short a time as was reasonable for a building on such poor ground. Both the shortness of the forfeiture contract and the expense of the piling and deep foundations forced up the price of this building. The original contract price and the cost to date may be compared as follows:

| Original Contract. | Amount of
Contract to date. |
|---------------------|--------------------------------|
| <u>\$107,213 00</u> | <u>\$106,991 00</u> |

It has a rated accommodation of 600 children in 12 rooms, and at the outside limit for a primary it would have shown a cube of 420,000 cubic feet. The cube was within this, however, 411,645, but the cost per cubic foot was largely in excess, about 26 cents, so that the cost per pupil is \$24.32, above the high limit for a primary. The cost was due to expensive piled foundations. The work is considerably hampered by the severe winter, but we expect it to be completed on time.

Item 23. Roxbury. Hugh O'Brien District. East of the present George-street School-house. Primary school-house.

This building has been named the Samuel W. Mason School. It was let in four contracts, and the original contract prices may be compared with the cost to date as follows:

| | Original Contracts. | Amount of
Contracts to date. |
|------------------------|---------------------|---------------------------------|
| General Contract . . . | \$102,480 00 | \$100,122 00 |
| Heating " . . . | 10,477 00 | 10,477 00 |
| Plumbing " . . . | 4,912 00 | 4,892 00 |
| Electric " . . . | 3,360 00 | 3,360 00 |
| | <u>\$121,229 00</u> | <u>\$118,851 00</u> |

The architect is Mr. John A. Fox. The building is rated at 14 rooms and 700 pupils. This would give, at the high limit, 35,000, a cube of 490,000 cubic feet, and at 22 cents a cost of \$107,800. The actual cube is 438,223, rather below the limit, but the cost per cubic foot is the largest of any building that has been let by this Board. The figures were examined very carefully in detail, and the Board were unable to find any unusual extravagances in the plans or specifications.

By permission of the Mayor, the Board had the plans and specifications redrawn to make the building second-class construction above the basement; and invited the four lowest bidders to submit estimates for the building thus constructed. The four bids submitted were as follows:

| | First Class. | Second Class. | Saving. |
|--------------------------|--------------|---------------|---------|
| Whiton & Haynes Co. . . | \$102,480 | \$97,476 | \$5,004 |
| Connors Bros. Con. Co. . | 105,100 | 95,800 | 9,300 |
| W. N. Pike & Sons . . . | 105,500 | 98,000 | 7,500 |
| Mack & Moore | 107,400 | 104,700 | 2,700 |
| Average saving, \$6,126. | | | |

Using the lowest estimates, the total cost of building, all trades, first-class, was \$121,229, and the total cost of building, all trades, second-class, \$114,549, a saving of only 5.42%.

Under these circumstances the Board decided not to make the change to second-class construction, but by certain changes in the yard and in the exterior the cost has been reduced about \$2,303. The excessive cost appears to be due to the fact that the lot is a very large one, over 50,000 square feet, ample for the accommodation of two such buildings. The grading of the whole lot and the fencing and planting of the whole lot is included in this contract. The site is expensive in the matter of foundations, requiring piling and clean filling, to replace the salt marsh and mud excavation.

The building was let June 22, 1904, and is to be completed August 1, 1905. Good progress has been made, and there seems to be every reason to believe that the building will be finished on time.

Item 27. Henry L. Pierce District. In the vicinity of Bailey street. Primary school-house.

This building has been named the John Greenleaf Whittier School. It is a 10-room primary building and was let in four contracts, the price of which may be compared with the cost to date as follows:

| | Original Contract. | Amount of
Contracts to date. |
|------------------------|--------------------|---------------------------------|
| General Contract . . . | \$58,464 00 | \$58,464 00 |
| Heating " . . . | 7,469 00 | 7,540 70 |
| Plumbing " . . . | 3,536 00 | 3,536 00 |
| Electric " . . . | 2,724 00 | 2,729 00 |
| | <u>\$72,193 00</u> | <u>\$72,269 70</u> |

At 35,000 cubic feet per room, the cube should have been under 350,000, and at 22 cents the cost should have been under \$77,000; the actual cube was 325,051, and the cost as given above. Both in cost and cubic contents this building is therefore within the limit.

The building was let July 27, 1904, and is to be finished April 27, 1905. It has been somewhat delayed by the extreme severity of the weather, but it is hoped that it will be completed nearly on time.

Item 19. Mechanic Arts High School-house to be enlarged.

At the time of the last report it was expected that this building would have been advertised in the spring of 1904. The Board finding that the funds at their command would be insufficient to take care of this item, and also the four remaining primary items, decided that their first duty was to complete the primary items. This work was necessarily postponed, but the plans and specifications are completed, awaiting only a further appropriation for the work to be begun.

Item 20. Normal School. In the vicinity of Dudley-street transfer station.

Item 21. Girls' Latin School. In the vicinity of the Normal School.

Item 22. New District. In the vicinity of the Normal School. Grammar and primary school-house.

After the action of the School Committee, referred to in the last annual report, whereby they reversed the decision placing the Normal and Girls' Latin Schools in the Martin District, they once more voted, on April 12, 1904, to designate the Martin District, and the Board, having received a more favorable offer than that on the land spoken of in the last

report, on the 26th of May, 1904, requested the Board of Street Commissioners to take land on the Tremont entrance to the Fenway, Worthington street and a Board of Survey street. This land contains 111,000 square feet, and its total cost was \$165,580.54. On May 18, 1904, the Board appointed Messrs. Peabody & Stearns, Messrs. Maginnis, Walsh & Sullivan, and Messrs. Coolidge & Carlson architects of the buildings; these three firms to work in collaboration, the Board paying the usual commission on the cost of the buildings and allowing them to arrange the division of the work.

The plans are now in preparation and four buildings are contemplated, the Normal School, an independent building for the model school, the Girls' Latin School, and a common building, containing the gymnasia of the Normal and Latin, and the various lunch, locker and bath-rooms for both schools.

To meet the expense of these buildings, together with other items, the Board have asked for an act allowing the City of Boston to borrow within the debt limit. The buildings are urgently needed. The Normal has for years been in wholly inadequate and unsuitable quarters, and the city is at a disadvantage in attempting to train its teachers under these circumstances. The Girls' Latin is occupying extremely expensive quarters, with a lease that is liable to be terminated at any moment.

Item 11. Charlestown. New high school. Present lot to be enlarged.

In the first annual report, page 10, the Board reported the purchase of the land, July 19, 1902, for the extension of the Charlestown High School. Messrs. Stickney & Austin were appointed architects July 22, 1904, and the preliminary plans for the building are practically complete. This, with the Mechanic Arts High School and the Normal and Girls' Latin group, are awaiting a new appropriation.

These complete the list of the buildings reported upon last year. The following have been undertaken during the present year:

Item 12. South Boston. Lincoln District. Tuckerman site, corner L and Fourth streets. New primary school-house.

A new primary on the Tuckerman lot, in South Boston, to replace the old building to be torn down. The School Committee asked for a ten-room building. The Board, on April 21, 1902, requested the Street Commissioners to take land adjoining the present site, comprising three lots, containing in all 9,929 square feet, the cost of which was \$24,675. This taking was one of the first experiences of the Board in

real estate transactions, and may be compared with recent figures of land taken in the same vicinity for the Oliver Hazard Perry School. See Items 13 and 14.

Mr. Charles K. Cummings was appointed architect August 2, 1904, and the building was let in four contracts, as follows: General contract, William Crane, \$61,467; heating, A. A. Sanborn, \$8,435; plumbing, M. J. Kelly, \$4,173; electric work, James Wilkinson & Company, \$2,990.90 — a total of \$77,065.90. The limits on this building are the same as on the John Greenleaf Whittier, Item 27, already referred to. The limit of \$77,000 has been slightly exceeded. Both heating and electric figures have been running from ten to fifteen per cent. higher than six months ago. There seems to be no general rise in the market to account for this, but the contracts which the city has made in the past two years for this work have been extremely low.

The building was let on December 8, 1904, and is to be completed August 25, 1905. It will be noted that it took nearly four months to prepare the plans and specifications on this building, and that this is rather better than the average.

Item 28. Dorchester. Harvard-street District. Primary School-house.

A study of the conditions on the spot, eighteen months ago, had pointed to the desirability of abandoning the property owned by the city on Glenway street, and building the new primary in the neighborhood of Harvard street. Land was therefore advertised for on July 30, 1904. At the hearing, after the bids were opened, a very strong opposition developed to any lot in the neighborhood of Harvard street; that is, any lot that was at the southern end of the district, and the Board, after careful investigation of all the conditions, and after consultation with the superintendent and the master of the Christopher Gibson School, decided to retain the old lot and build there.

The School Committee called for a ten-room building. James E. McLaughlin was appointed architect August 2, 1903, and instructions were given him on September 15. The same limits apply to this building as to the Tuckerman and the Whittier, namely, 350,000 cubic feet, and a cost of \$77,000.

The building is to be let in four contracts. These have not, as yet, been awarded, but it is probable that the building will be slightly in excess of \$77,000, largely due to the excess in heating and electric work.

Item 17. Phillips Brooks District. A six-room addition to present Howard-avenue School-house.

With the advice of the Superintendent and the School Committee, the Board proposed a separate building in place of an addition to the present second-class building which is on the lot. The School Committee asked for an accommodation of eight rooms. The development of the plans showed, however, that a three-room plan three stories high would best fit the lot, and the building therefore has an accommodation of nine rooms.

Mr. W. H. McGinty was appointed architect August 2, 1904. The outside limit would be 315,000 cubic feet, and at 22 cents would give a cost of \$69,300. The building should really figure less than this, as there is comparatively little to be done on the grounds already occupied as school yards. The building is not yet ready to advertise.

Item 24. Roxbury. Lewis District. In the vicinity of Perrin street. Primary school-house.

This has been for two years one of the most urgently needed of the primaries, but when the Normal School was designated for this district it was expected that the Model School would meet this need. Owing to the constant changes of the School Committee as to the location of the Normal, this item was delayed. When the Normal School was finally located in the Martin District and the Street Commissioners requested to take the land therefor, which was on May 26, 1904, the Board proceeded at once to find land for this item. Land was advertised for on June 3, 1904, and on the 22d of July, 1904, the Street Commissioners were requested to take land on Perrin street, containing 34,498 square feet. The cost of this land was \$26,431.05.

The School Committee, with the advice of the Superintendent, stated that the building should be not less than eighteen rooms. One of the two parcels of land which the Board had under final consideration would accommodate a six-room plan and the other an eight-room plan. It was the latter land that was eventually bought, and the Board decided to build three stories, thus giving 24-room accommodation. Messrs. Schweinfurth & Craig were appointed architects August 11, 1904, and the limit of cost set at \$158,400. Owing to the urgent need, this building is to be let in a single contract, with forfeiture and bonus, but the preparation of plans and specifications has already occupied over six months, and the building is not yet ready to advertise.

With the exceptions previously stated, this completes the report on all the items contained in the original list of 42 items.

(3.) SANITATION INSTALLED.

The Board have continued the work of replacing defective and especially unhealthy systems of sanitation with new plumbing, and comparatively every building in the city which can be ranked as a permanent structure has now been equipped with proper modern sanitary appliances. There remain a few examples of such systems as flush vaults, which, though not up to modern standards, are yet not a menace to health. These still remain to be taken care of.

No fundamental changes have been made in the types of fixtures recommended by the Board. These are shown in the illustrations at the end.

In the following schools new sanitation has been installed :

BENJAMIN POPE SCHOOL. Eight-room primary building, Gaston District. Old long-hopper closets and urinal in basement removed, all sinks, janitor's and teachers' water-closets and wash-bowls, all drainage supplies and vent throughout building removed. New installation, consisting of 19 short-hopper closets, and 19½ feet of slate urinal in boys' and girls' toilets in basement, 1 galvanized-iron sink for janitor, 4 slate sinks, 1 water-closet for janitor, 1 teachers' water-closet and lavatory bowl, 4 catch-basins, 5 conductors, 3 sill-cocks, new wastes, drains, vents, and supplies. Electric fan system of local ventilation installed. In connection with repairs on heating system, 1 new ventilator was placed on roof. The indirect stacks in toilet-rooms were bricked up and altered, and new vents from 4 classrooms were also put in place and connected with vent on roof. Cost, \$6,301.70. Finished August 26, 1904.

BREWSTER SCHOOL. Four-room primary building, Roger Wolcott District. Old cremating system and cesspool drainage removed, and new system installed in basement and connected to sewer, consisting of 1 set of 15 and 1 set of 8 porcelain-lined latrines, 15 feet of slate urinal and 2 slate sinks; the conductors were also repaired, and yard drainage connected to separate surface drainage system. Under this contract the drainage from the Brewster Annex building was connected to sewer in street. Fan system of local ventilation installed. Cost, \$3,507.74. Finished in September, 1904.

CHARLES SUMNER SCHOOL. Eleven-room grammar building. All old sinks, wastes, vents and supplies connected with same removed; 4 new slate sinks and 1 large soapstone sink for cooking-room, 1 teachers' water-closet and 1 lavatory bowl were installed and connected with new wastes, vents and supplies. Cost, \$800. Finished in September, 1904.

ELIOT SCHOOL. Fourteen-room grammar building. All old sinks, wastes, vents and supplies connecting same removed. The

new installation consisted of 7 new slate sinks, 1 teachers' water-closet and 1 lavatory bowl. New waste vents and supplies were connected with new fixtures and carried to basement. A new fan system of local ventilation for sanitary fixtures in basement was installed. Cost, \$1,281.49. Finished in July, 1904.

GIRLS' HIGH SCHOOL. The old sanitation and supply system, except 5 sinks and 1 bowl, removed, and new wastes, drain, vents and supplies were installed. A new fire system was also put in. New wastes, vents and supplies were run to fixtures. The following is a list of new fixtures: 32 short-hopper closets for pupils in basement, 1 janitor's and 1 teachers' closets in basement, 1 master's closet on first floor, 1 teachers' closet on second floor, 2 emergency and 1 teachers' closet on third floor, 2 emergency closets on fourth floor, 2 galvanized-iron sinks for janitor's use, 2 Alberene sinks and 1 bath-tub for janitor, 8 bowls for pupils, supplied with hot and cold water, hot water tank and heater put into boiler-room, 10 bowls for pupils, 3 bowls for teachers, a new lead-lined drainage system from chemical laboratory sinks was installed, 10 outlets to fire service, with 10 racks, each having 60 feet of fire hose, 3 floor washes, 3 new manholes, 6 new catch-basins. The new sanitariums had new fireproof floors finished in terrazzo; 4 new fire doors were put in sub-basement and 11 openings were bricked up. New rooms for teachers' toilets on second, third and fourth floors were built and a skylight and shaft was extended from roof to them. Cost, \$13,685.33. Finished in September, 1904.

HARVARD HILL SCHOOL. Seven-room primary building, Harvard District. Old short-hopper closets and all old plumbing removed. New system installed on ground floor, consisting of 3 sets of 5 porcelain-lined latrines, 21 feet slate urinal, 4 slate sinks, 1 teachers' water-closet, 1 lavatory bowl, 1 janitor's water-closet, 1 janitor's galvanized-iron sink and 3 sill-cocks. New yard drainage, 1 catch-basin, 5 new conductors. Fan system of ventilation installed. Cost, \$5,408.41. Finished August 31, 1904.

HAWES HALL AND SIMONDS SCHOOLS. Hawes Hall School, eight-room primary building, Simonds School, three-room primary building, both in Bigelow District. Old vault in yard and all the old plumbing in both buildings removed. The new system was installed in a new building erected in yard and connected to basement of Hawes Hall School. New installation consisted of 1 set of 2, 1 set of 5, 1 set of 8, and 1 set of 11 porcelain-lined latrines, 28½ feet of slate urinal, 6 slate sinks, 1 galvanized iron sink for janitor, 1 teachers' closet and bowl, 1 janitor's closet, 7 catch-basins and new yard drainage, 4 conductors, 3 sill-cocks. In the Simonds School there were placed 3 enamelled iron sinks, 1 teachers' water-closet and 1 lavatory bowl. Fan system of local ventilation installed. Cost, \$12,253.42. Finished in October, 1904.

LINCOLN SCHOOL. Fourteen-room grammar building. Old vault in out-building and all old plumbing in main building

removed; new system installed in basement of main building, consisting of 15 short-hopper closets, 69 feet of slate urinal, 4 slate sinks, 2 teachers' water-closets, 2 lavatory bowls, 1 janitor's galvanized-iron sink, 4 catch-basins, 4 conductors, 3 sill-cocks and a complete new system of yard drainage. Fan system of local ventilation installed. Cost, \$8,201.19. Finished in September, 1904.

MARY HEMENWAY SCHOOL. Eleven-room grammar building. Old tanks over water-closets and water supplies were removed. New installation consisted of 20 feet slate urinal, 32 new tanks for water-closets, new water supply from street carried to and connected to the various fixtures throughout the building; new fire service main carried from street and connected with old line. Fire service extended to third floor; 100 feet of hose and racks were added. The system of local ventilation of water-closets was cleaned and put in order. Cost, \$1,800. Finished in September, 1904.

MT. VERNON-STREET SCHOOL. Three-room primary building, Robert G. Shaw District. Old cremating system in basement, together with all old plumbing, removed. New installation consisted of 1 set of 5 and 1 set of 6 porcelain-lined latrines, 16½ feet of slate urinal, 5 slate sinks, 1 galvanized-iron sink for janitor, 1 teachers' water-closet and lavatory bowl, 2 sill-cocks, and repairing 5 conductors. Fan system of local ventilation installed. Cost, \$6,154.63. Finished in September, 1904.

PLUMMER SCHOOL. Thirteen-room primary building, Adams District. Old cremating system in basement removed, new installation, consisting of 30 short-hopper closets, 28½ feet of slate urinal, 2 teachers' closets, 2 lavatory bowls, 1 closet, special type for kindergarten, 1 janitor's closet, 1 galvanized-iron sink for janitor, 1 slate sink, 2 catch-basins and 3 sill-cocks. The old sinks were reset and connected to new wastes, vents and supplies. All the conductors were repaired, provided with new traps and connected with new drains. In connection with sanitation electric lights were placed in toilets. Fan system of local ventilation installed. Cost, \$6,406.13. Finished in September.

WILLIAM WIRT WARREN SCHOOL. Eight-room primary building, Washington Allston District. Old flush vault system in basement removed. New system installed in basement, consisting of 18 short-hopper closets, 27 feet slate urinal, 4 slate sinks, 1 galvanized-iron sink for janitor, 1 teachers' closet and lavatory bowl and 1 janitor's water-closet. Fan system of local ventilation connected with chimney stack was installed. Cost, \$3,126.72. Finished August 31, 1904.

WINCHELL SCHOOL. Twelve-room primary building, Wells District. Old water supplies removed from entire building. A new 2-inch main was carried from street and connected with various fixtures. Cost, \$691. Finished September, 1904.

Under the head of sanitation, the heating and ventilating systems in the following schools were thoroughly over-hauled, altered and repaired, and put in good working order, the cost of the same being given as follows :

| | |
|--|------------|
| Charles Sumner School | \$2,845 60 |
| Eliot School | 10,283 74 |
| Emerson School (East Boston) | 5,294 25 |
| Gaston School | 3,816 00 |
| Hull School | 1,775 65 |
| Lincoln School | 15,094 65 |
| Plummer School | 3,314 50 |
| Roger Wolcott School | 1,573 00 |

(4.) FIRE PROTECTION.

Through the courtesy of the Fire Commissioner, the Board were enabled to consult with the chiefs in regard to the type of fire escapes to be erected and the uses for which they were intended. It appears from this conference that the object of the fire chiefs is to have on the older school buildings, which are not fireproof and not protected like the modern buildings, some ready means of getting to the upper stories on the outside of the building, and that these should be in the shape of staircases that can at need be used by the children. These staircases would not be looked upon as the ordinary means of exit in case of an alarm of fire, as long as one of the regular staircases was free, but would be rather a last resort in case of emergency, when it would be hoped that the exit by the fire escapes would be governed and controlled by the firemen. Under these circumstances the type which the Board have been erecting seems to be the one which best meets the needs of the case.

Following the outlines of the report last year, the Board have made a careful inspection and report on the condition of the basements in every permanent building in the city, and propose to take these up as rapidly as funds permit, and protect as far as possible all existing heating apparatus which is not at present contained in fireproof rooms.

Fire escapes have been erected on the following buildings :

Emerson School, Poplar street, Grant School, Hawes Hall School, Simonds School, Roxbury High School.

In addition to these, new exits have been made in the following schools, thus making egress by means of the fire escapes already existing a much easier matter :

Somerset-street School, Emerson School, Tyler-street School, Eliot School, Grant School.

III.

REPAIRS.

Under the appropriation of 25 cents per thousand for repairs, \$370,000 was available for 1904. During the winter, however, the School Committee applied to the Legislature for an act putting the whole expense of this department on its own funds. If this had gone into operation a year later it would have enabled the Board to make their plans accordingly. As it was, the work on repairs had already been laid out and much of it already contracted for, and this unexpected charge coming against the funds for repairs seriously hampered the work of the Board during the last three months of the year.

The Board have continued the policy of completing as far as possible major repairs, continuing the work of cleaning and painting within and of repairing old floors and laying new floors, and replacing the paper blackboards with slate. This latter policy was decided upon in view of the great expense of the yearly repairs of the various paper blackboards, the Board believing that it would be economy in the long run gradually to replace these with slate.

The summer work was, as usual, laid out in the spring, so that it might be carried through promptly during the long vacation. The loss of time and the cost of petty repairs is still a source of difficulty to the Board with the present system. The most trivial repair must be asked for by a requisition, approved by one of the Commissioners, ordered by the inspector, approved by the inspector and approved by the master before it is paid for. When the repair required is but a pane of glass this is a cumbersome amount of red tape. The Board have under consideration a method by which they hope to be able to handle these small repairs without the necessity of so much machinery. They hope also to be able to carry out the policy outlined in the last report of depending more and more on the janitors for these petty repairs.

The use of the schools for evening purposes, educational centres and vacation schools is a very serious problem to those who have charge of the repairs. The day schools, under a long-established system, are well disciplined and under perfect control. The evening schools are not on this same basis, and more damage is done by the various outside

users of the school in the short time of their occupancy than is done by the regular school during the whole of the school terms. Much of this is probably unavoidable, and the city is undoubtedly prepared to pay for the added charges of education that are thus offered to citizens; but it ought to be possible to arrange that nothing more than the ordinary wear and tear should be the resultant of this use.

In Appendix III. can be found a statement showing how the repairs are distributed in the various schools.

IV.

POLICY OF THE BOARD.

The Board have continued the policy outlined in their report of last year, and consequently are not departing from the standards giving accommodation that is suitable in primary and in grammar schools.

Briefly, these are that a primary school shall contain, in addition to class-rooms and wardrobes, nothing except a teachers' room and toilets for use in case of emergency above the basement. That the basement shall contain nothing but the toilet-rooms, play-rooms and the heating apparatus; that a grammar school shall contain, in addition to the above, a room for the master, and in case of a large grammar school, which has both men and women teachers, accommodation for the men as well as for the women, a cooking-room, manual training room, and an assembly hall. Bearing in mind that the first duty of the city is to the children of school age, the Board have used the funds at their disposal to complete the grammar and primary schools contained in the list of 42 items.

All the plans prepared for the Board have conformed strictly to these requirements, with the result that the accommodation and cost have been kept at a comparatively uniform rate. The agreement with the architects as given below has been slightly modified, largely with a view to employing language less purely legal in its form and to cover the case of partial services, a matter not fully considered in the previous form. The Board wish to acknowledge their indebtedness to the Boston Society of Architects, which appointed a special committee to redraft this agreement.

ARCHITECTS' SERVICES.

Every Architect employed by the Schoolhouse Commissioners of the City of Boston as the Architect for erecting a building is to perform the duties hereinafter provided.

SECTION 1. — *The Board.* — (a.) Is to furnish the Architect with the requirements and information for the design and construction of the building for which he is the Architect, and give the approximate cubical contents and proposed cost per cubic foot thereof;

(b.) Is to employ domestic engineers to confer with the

Architect during the preparation of preliminary studies, and when these are accepted by the Board to advise the Architect in the details of their work, and make the necessary working drawings and specifications for, and have the direction of, the heating, ventilating, and electric work for the building, said work being hereinafter designated as the domestic engineering;

(c.) Is to give the grade and lines of streets and adjoining lots;

(d.) Is to make all borings necessary to determine the quality of the foundations, and on request of the Architect or of any person doing work on the building, furnish him full information relating to the above, the sewer, water, gas and electric service, and to the rights, restrictions, and boundaries of the lot on which the building is to be constructed.

SECT. 2. *The Architect.*—(a.) Is to consult and advise with the Board and make such preliminary studies as will acquaint the Board with the contemplated arrangement, design, construction and cubical contents of the building, and enable them to agree with the Architect upon a definite limit of cost therefor, and to accept said preliminary studies as the basis of working drawings and specifications;

(b.) Is to make, upon the basis of said preliminary studies, one complete set of working drawings in ink on tracing cloth, floor and framing plans, sections and elevations at one-eighth scale, and such detail drawings on a larger scale as are necessary to explain the specifications;

(c.) Is to furnish, revise and correct for the printer one complete set of specifications for everything to be furnished or done in constructing the building, except the domestic engineering;

(d.) Is to loan to the Board, to make blue prints therefrom, the said set of working drawings;

(e.) Is to re-study and if necessary re-draw without charge, any or all of said drawings and specifications, if, owing to an unwarranted departure from the approved preliminary studies or to a needlessly extravagant or elaborate interpretation of them in said drawings and specifications, the lowest bid for doing the work in accordance therewith over-runs the limit of cost agreed upon by the Architect and the Board;

(f.) Is, upon the signing of contract, to deliver to the Board, to remain their property, two sets of blue prints mounted on cloth taken from the said set of working drawings, a perspective drawing of the exterior of the building suitable for reproduction, and at the conclusion of the work, a complete set of working drawings on tracing cloth, either the set previously referred to or a copy therefrom, which shall be corrected to agree with and embody all changes made during construction;

(g.) Is to make application for a building permit to the Building Department on a form signed by the Chairman of the Board, and deliver to the Building Department two sets of such blue prints from the said set of working drawings as may be required

by the Building Department (the Board furnishing specifications to the Building Department) ;

(h.) Is to have general supervision of the domestic engineering and be the Architect of all other work to be done under any written contract for the construction of the building and render the full usual Architect's services and supervision for such other work ;

(i.) Is, in the form prescribed by the Board, to make all estimates and allowances for payments under any contract in which he is made the Architect of the work, and such estimates for the domestic engineering are to be accompanied by certificates of said Engineers as to their accuracy ;

(j.) Is to advise with the Board on any changes in the building contemplated by the Board, and is to order changes when required by the Board so to do ;

(k.) Is to cause the drawings and specifications furnished by him to conform to all regulations of law and public authorities, and to be in accordance with established methods of building construction, faithfully carry out all the foregoing provisions, use all proper knowledge, skill, and care therein, and be accountable for any failure so to do.

SECT. 3. — The City, as full compensation for the services aforesaid, is to pay the Architect $2\frac{1}{2}$ per cent. upon the cost of the domestic engineering, and 5 per cent. upon the cost of all other work, payments to be made as follows : $2\frac{1}{2}$ per cent. upon all contracts other than those for domestic engineering is to be paid on the signing of such contracts, and thereafter $2\frac{1}{2}$ per cent. upon the value of the materials and labor, as specified in each estimate for payment under the contract, is to be paid on the making of the estimate, until the full payment aforesaid is made, and if any thereof remains unpaid at the completion of the work it is then to be paid. When preliminary studies are completed, the value of the Architect's services to date shall be reckoned one-fifth of the estimated total commission ; when working drawings and specifications are ready for contract, the value of his services to date shall be reckoned as three-fifths of said commission. If the Board discontinue the services of the Architect at any intermediate stage the value of his services shall be reckoned proportionately.

SECT. 4. — When for any reason other than those stated in Sect. 2, paragraph (e.) above, the Board shall set aside the whole or any part of an Architect's studies, drawings, and specifications while retaining him to prepare corresponding new studies, drawings, and specifications for the same school building, the City shall pay the Architect for the work thus set aside a sum not exceeding three times the actual cost of draughting, and the new work shall be paid for on a commission basis as stated in Sect. 3, above.

SECT. 5. — In the above agreement the term " building " is used to define not only the structure itself, but all work in con-

DETAIL

MENT

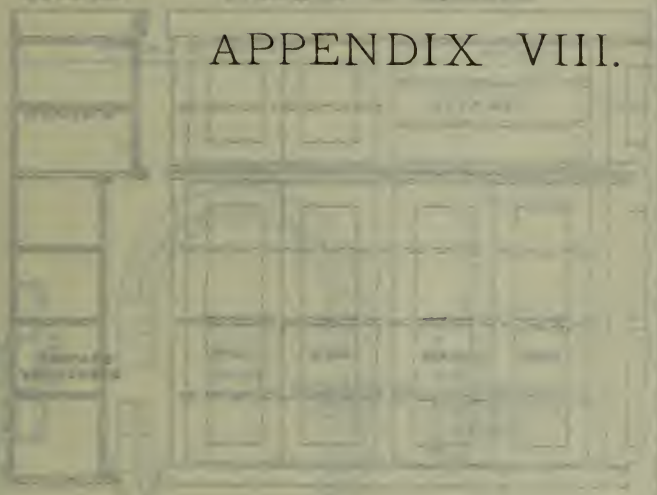
STANDARD DRAWING



2'0" x 2'0"

STANDARD DRAWING

APPENDIX VIII.



2'0" x 2'0"

STANDARD DRAWING



STANDARD DRAWING

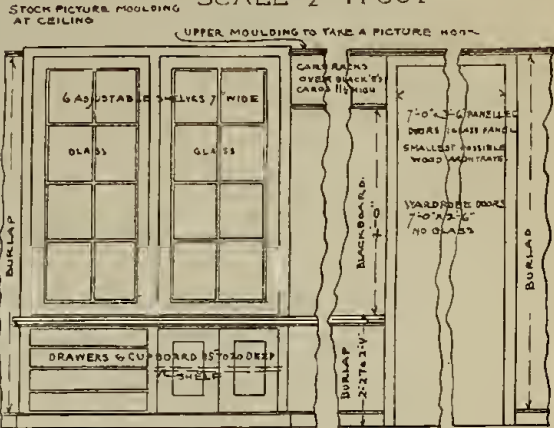
COOKING ROOM FITTINGS

STANDARDS OF GENERAL DETAIL

CITY OF BOSTON SCHOOLHOUSE DEPARTMENT

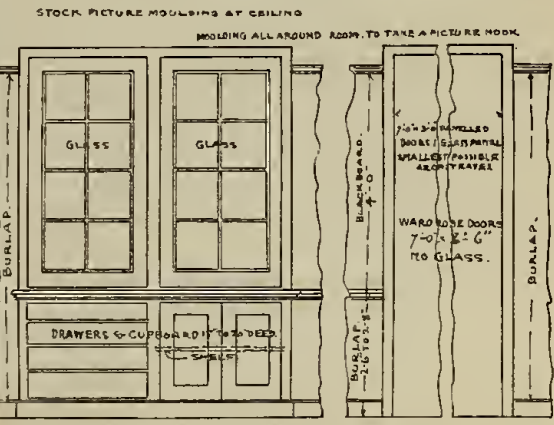
BOOK CASES

SCALE $\frac{1}{2}$ " = 1 FOOT



BOOK CASES FOR PRIMARY SCHOOLS.

ALL DOORS & DRAWERS TO LOCK

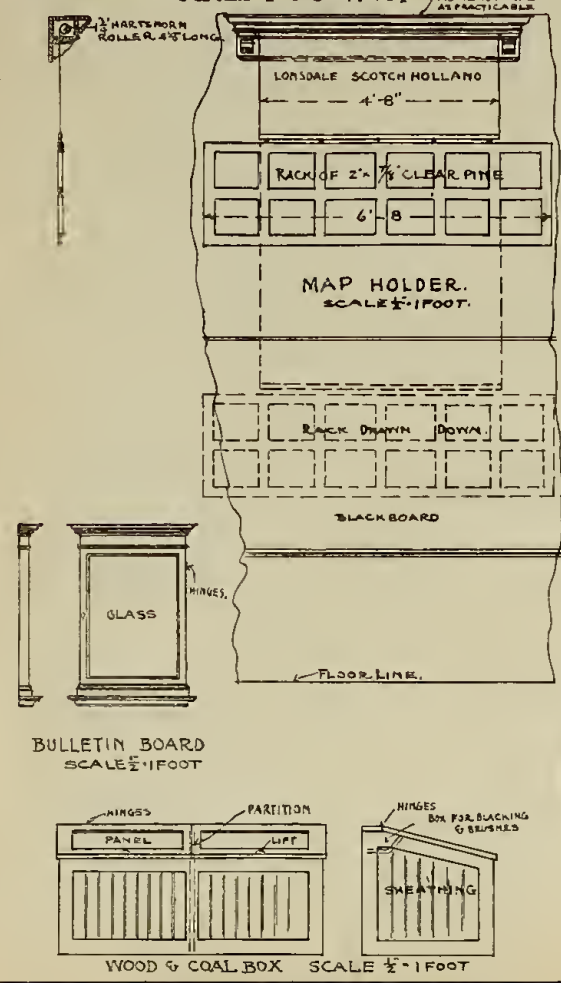


BOOK CASES FOR GRAMMAR SCHOOLS

SCALE 0 1 2 3 4 5 6 7 FEET

MAP HOLDER, BULLETIN BOARD, ETC.

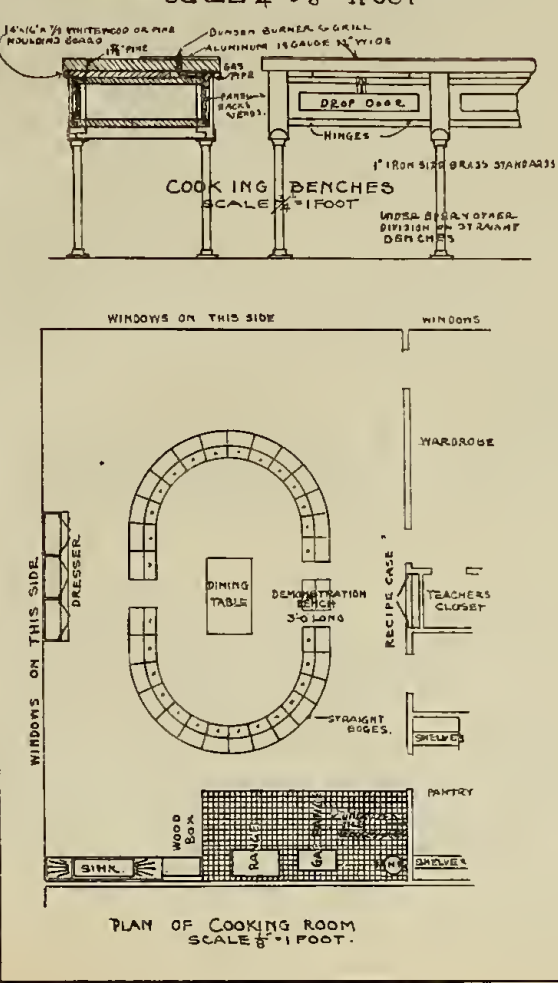
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SCALE 0 1 FOOT

COOKING ROOM & FITTINGS

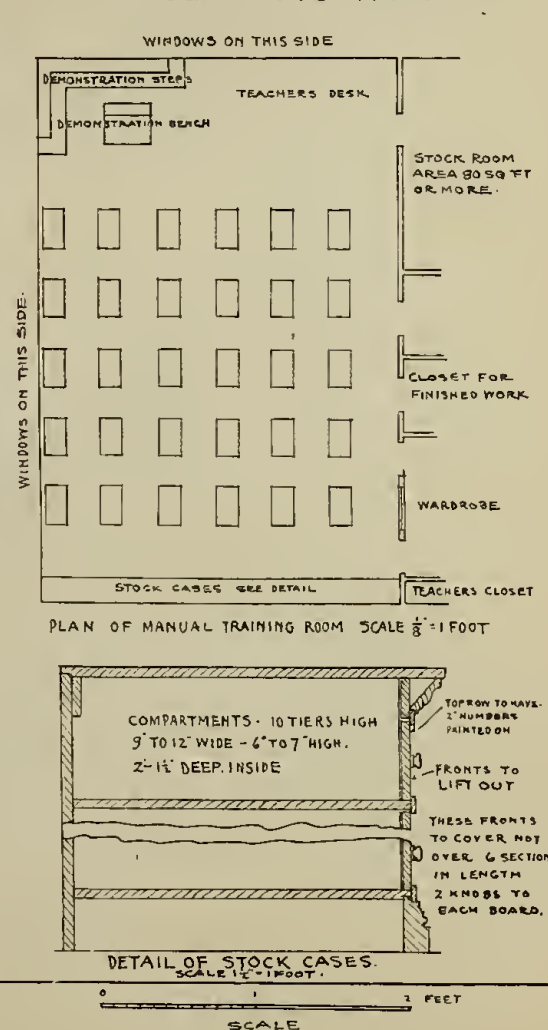
SCALE $\frac{3}{8}$ " & $\frac{1}{8}$ " = 1 FOOT



FEET 0 1 2 3 SCALE

MANUAL TRAINING ROOM

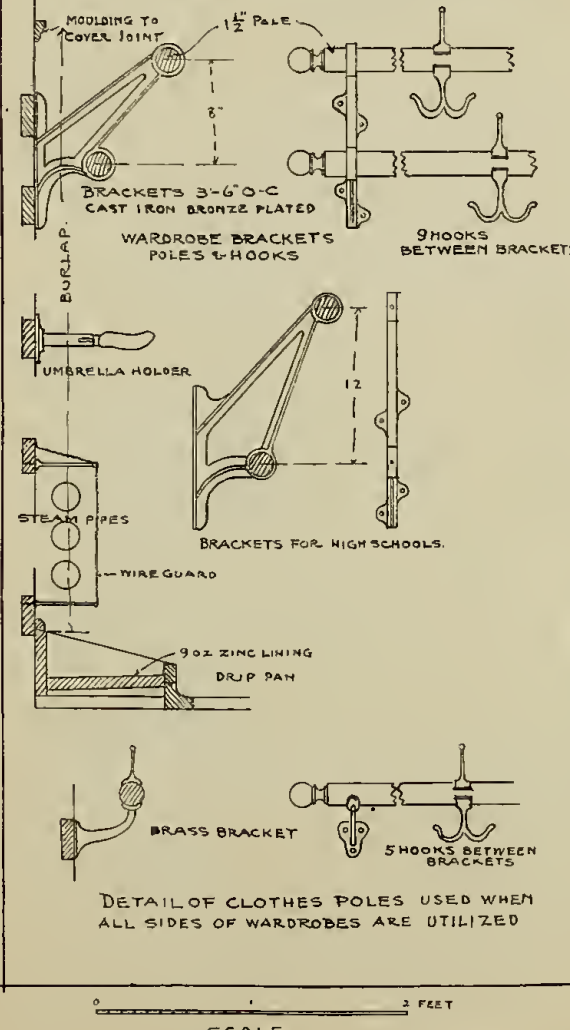
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SCALE 0 1 2 FEET

WARDROBE FITTINGS

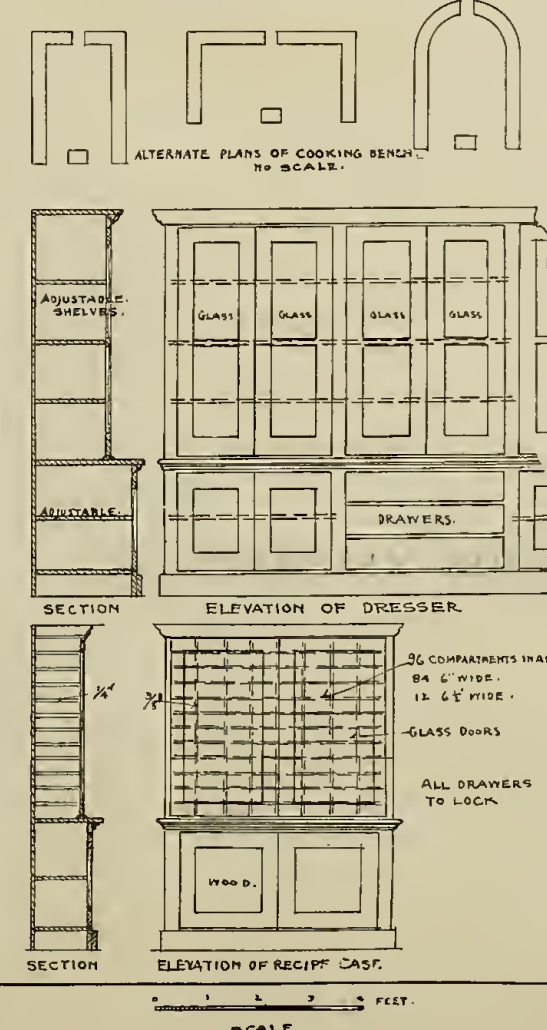
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SCALE 0 1 2 FEET

COOKING ROOM FITTINGS

SCALE $\frac{1}{2}$ " = 1 FOOT



SCALE 0 1 2 3 FEET

STANDARD CITY

BOOK CASES



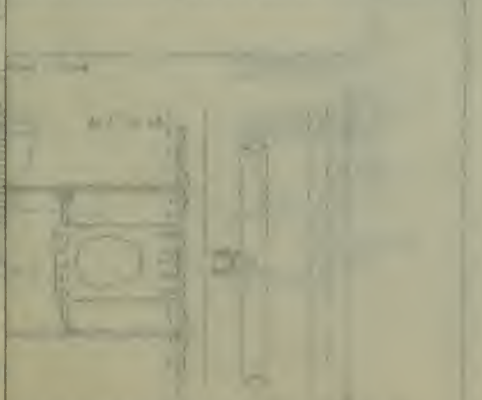
DEPARTMENT

OF THE



APPENDIX IX.

PLAN OF THE



WICH-HOMER-STREET

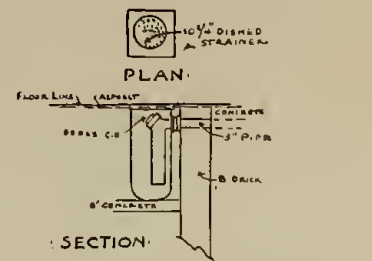
PLUMBING

STANDARDS

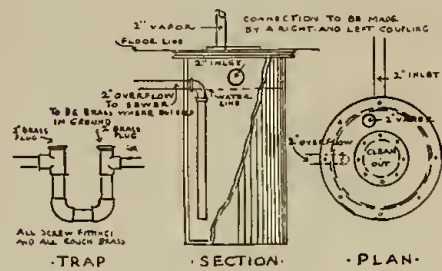
SCHOOLHOUSE

DEPARTMENT

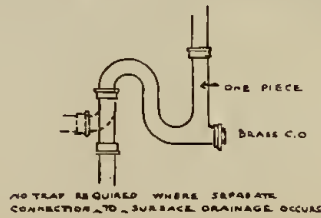
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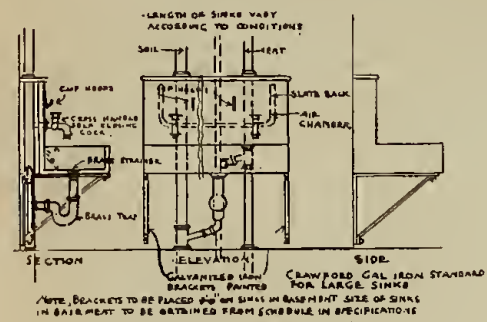
BLOW-OFF TANK



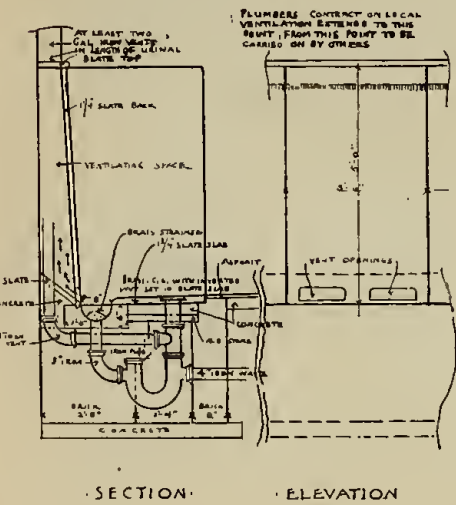
CONDUCTOR TRAP



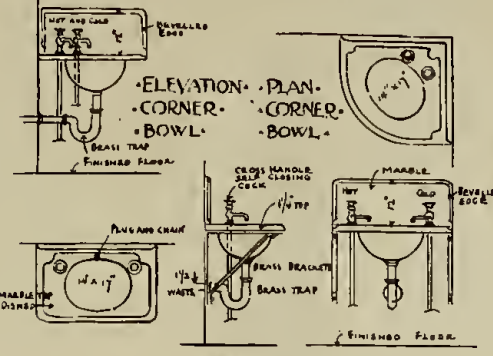
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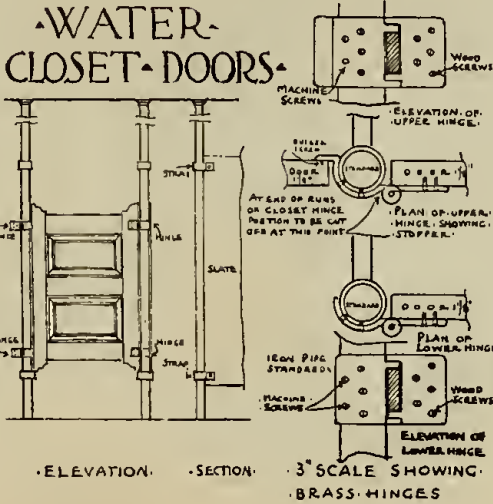
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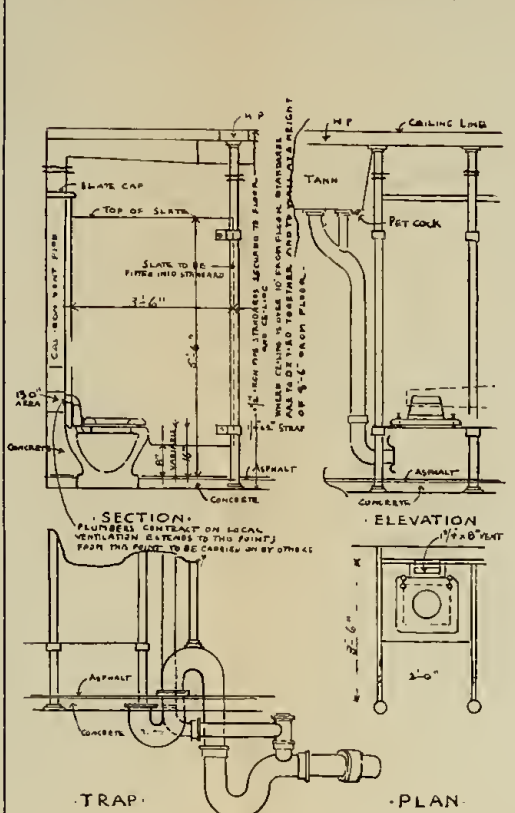
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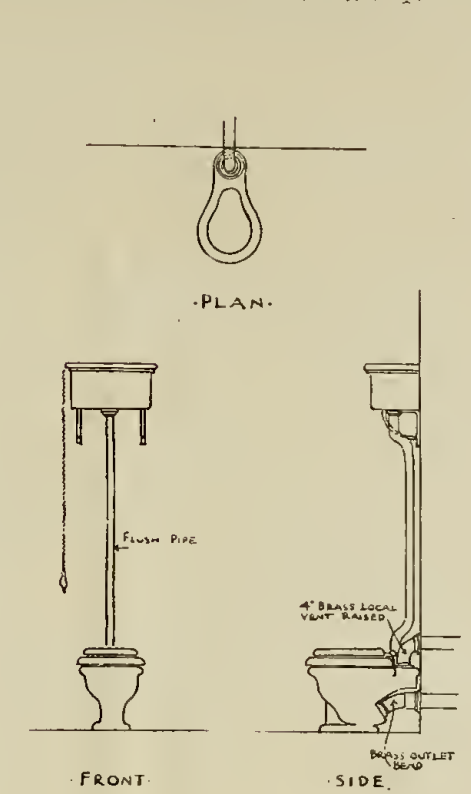
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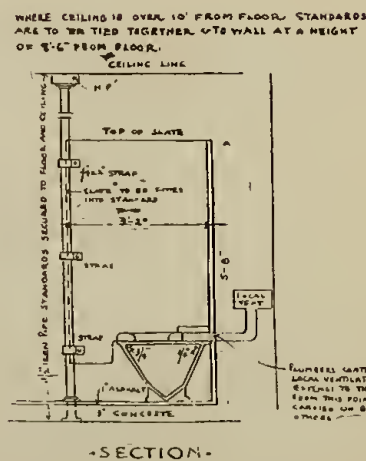
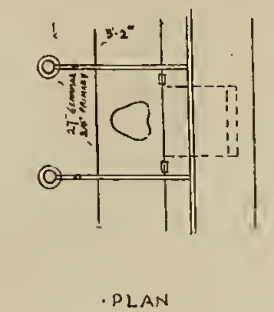
PORCELAIN LATRINES



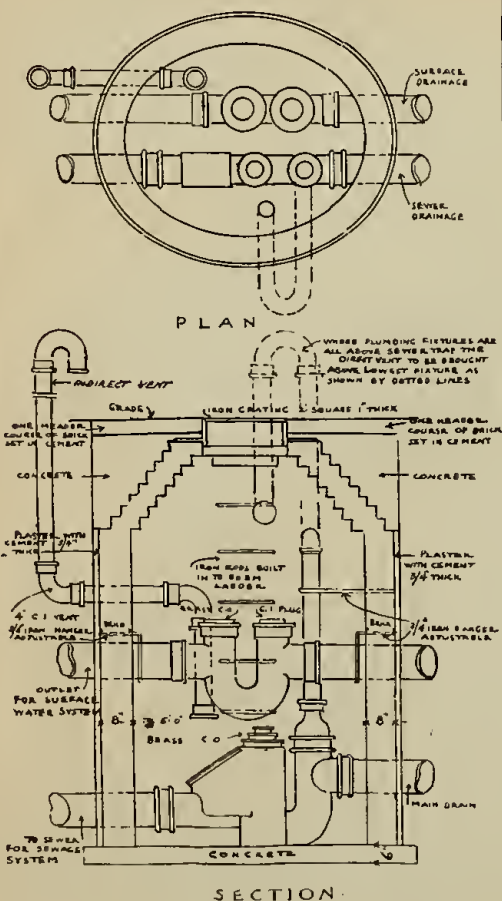
TEACHERS CLOSET



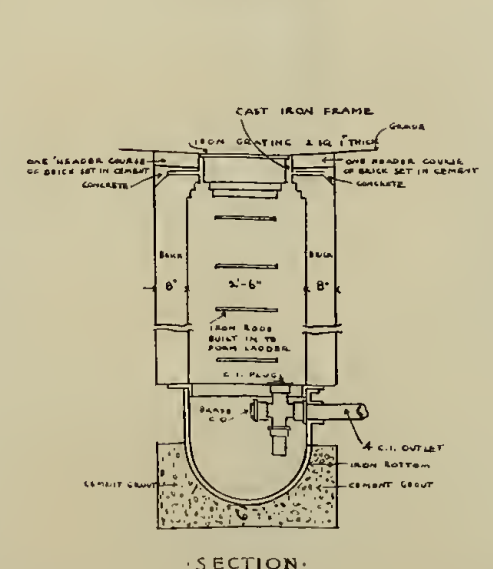
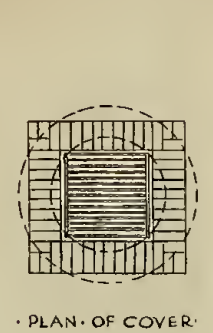
IRON LATRINE



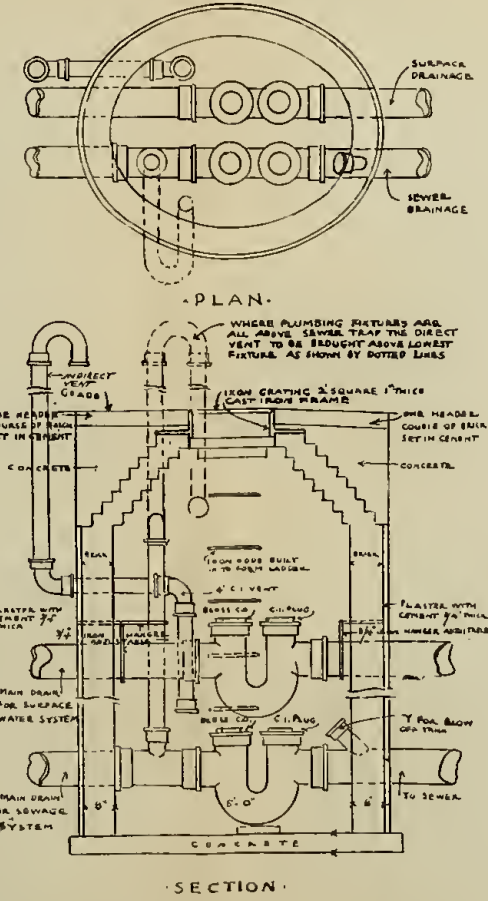
TIDE TRAP



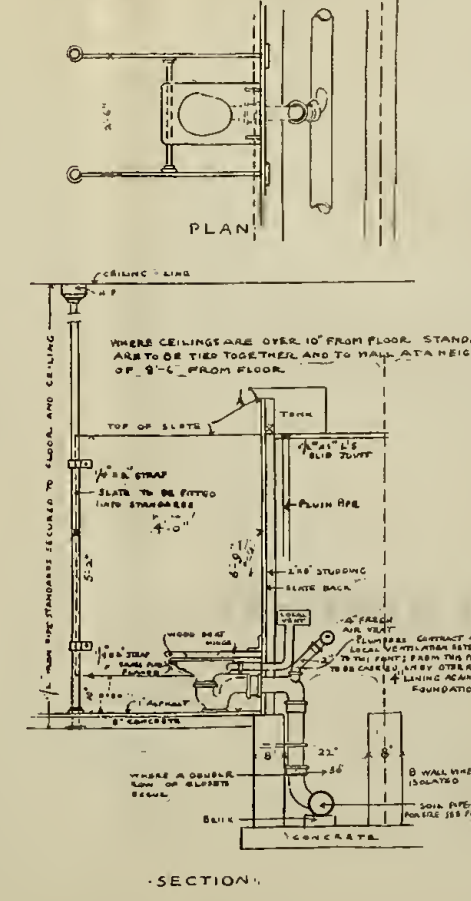
CATCH BASIN



RUNNING TRAP



SHORT HOPPER CLOSET



nection with it committed to the Architect by the order of the Board, as fencing, grading, roads, walks, planting, decorative painting, and sculptural decoration.

The Board have continued its policy of employing engineers to do all of their heating and electric work; special notes on some of the systems already installed and being operated are contained in the criticisms of existing buildings in Section II.

V.

GENERAL DEDUCTIONS.

Last year the Board referred to the first report for certain information, and supplemented it by other information as to the character of buildings and general planning. In this report it is proposed to gather together the more important of these deductions.

The construction of all buildings has been determined upon as first class, the additional cost over the cost of second-class buildings being comparatively small, and the buildings being free from shrinkage and the movements necessarily accompanying a building with floors and partitions framed of wood. To take advantage of the law about staircases, we are obliged to make our buildings first class throughout, including the roof. In many cases the Board would be content to frame the roof of wood, protecting it on the under side with non-combustible material, if it were not for the clause relating to staircases, which provides that, in buildings not of first class construction, one staircase shall be enclosed in brick walls and shut in with fire-proof doors. Such enclosure the Board consider undesirable, and to avoid this make the roof fireproof, and the building first-class, thereby taking advantage of the law which exempts buildings of the first class from these restrictions.

In the planning of the buildings, the Board have found that the previous rules laid down in the first two reports have been fairly accurate.

These are, first, that an economical floor plan should never exceed an area of double the area of the class-rooms on one floor. (For example, a primary building having five rooms, 24x30, on a floor, should have an area of not over 7,200 square feet.)

The second rule was that a primary building should not contain more than 30,000 cubic feet per class-room, if its class-rooms are in excess, say of fourteen rooms; and it should not exceed 35,000 cubic feet per class-room, if it has a smaller number of rooms, on both sizes the cost to be estimated at about 22 cents. (For example, with these figures, the cost of a ten-room primary would be \$77,000, and the cost of a twenty-room primary would be \$132,000.) A grammar school should not exceed 40,000 cubic feet per class-room, if it is a building of over eighteen rooms, and a building of less rooms

should not exceed 45,000 cubic feet per class-room, the cost again being put at 22 cents per cubic foot. The cost thus arrived at must include all trades, the building ready for furniture and the grounds entirely finished. It does not include commissions nor furniture.

Third, that the exterior should be of the simplest description, of common brick, with such use of stone as is necessary for heads, sills, cornices, etc., it being understood that with the smaller buildings the utmost economy must be observed to keep them within the limits, and that with a very large building slightly more freedom is allowable.

Fourth, that the grounds about the buildings shall be entirely completed and included in the contract, and that they shall show brick-paved playgrounds for boys and girls, not necessarily separated; brick-paved walks, a brick-paved, cement-set road for coal, and all the rest of the space laid out either for a permanent planted space or else for experimental gardens for the children. The area devoted to these purposes will of course vary slightly with the position and character of the building and the amount of space that the Board are able to buy for such purposes.

Some figures based on the recently erected schools, the Jefferson, the Ellis Mendell, the Farragut, the William E. Russell and the Marshall, show an average of 24.5 square feet per pupil devoted to the grounds. This we believe to be about as much as we may reasonably expect to set aside for the purpose. In the Jefferson, where these spaces are divided in a reasonable way, the area of the building is 13,000 square feet, the playground 14,500, and the walks and planted spaces 11,353 square feet, the total area of the lot being a little over 38,000 square feet. This building is rated at 950 pupils.

These rules and figures enable one to test at the outset a plan that is submitted to the Board. It allows the Board also to see just where the failure occurred which made this or that building cost more than it should have cost. This is pointed out in the first part of the report in the criticism of the earlier buildings.

In addition to the above the following general information is appended, which covers primary and grammar schools:

GENERAL INFORMATION FOR "FIRST-CLASS" CONSTRUCTION.

SCHOOL-ROOMS. (1.) *Size* will be 24 by 30 Primary and 26 by 32 Grammar and not less than 13 feet in clear. Modification allowable only after consul-

tation with the Board. Every room shall be numbered on the plans to designate it.

(2.) *Windows* will be on the long side for left hand lighting; the glass shall contain not less than $\frac{1}{2}$ of floor area, about 160 square feet for a room 24 feet wide; neither double run of sash nor double glazing will be required, but a dust-proof weather strip; the head square and close to the ceiling, the sill about 2 feet 6 inches from floor; the windows divided with muntins, no large sheets of glass. Finish with plastered jamb, no architrave, metal corner bead.

(3.) *Doors*. — One to corridor, 3 feet 6 inches by 7 feet, partly glazed, to open out, placed preferably near the teacher's end; bronzed steel butts, lock, brass knobs, marble thresholds to fireproof corridors. Doors to have brass numbers and cardholders.

(4.) *Floors* will be Georgia pine rift, or maple.

(5.) *Walls* will be painted burlap up to top of blackboards or of tack boards, and above this plaster, tinted in water color; the blackboards 4 feet high, 2 feet 2 inches (in Kindergarten), 2 feet 4 inches to 2 feet 6 inches from floor in Primary, and 2 feet 6 inches to 2 feet 8 inches in Grammar. Behind the teacher and on one long side in Primary, and behind the teacher on long side and end in Grammar and High. These will be of best black slate, $\frac{1}{4}$ inch thick. In Primaries a rack or tack board for holding cards is desired above the blackboard. A picture moulding at top of burlap and also near ceiling in both Primaries and Grammars. (See drawings.)

(6.) *Ceiling* will be level, plaster, no paint nor tint.

(7.) *Lights*. — Six groups of four lamps each and light for teacher's desk, electric; no gas.

(8.) *Heating and Ventilation*. — The inlet for heat about 5 square feet, the outlet for ventilation about 5 square feet for gravity system and 3 square feet for fan.

(9.) *Bookcase*. — Provide a bookcase in any convenient position, capable of containing 300 octavo volumes; doors and drawers fitted with locks. (See drawing.)

(10.) *Map Supports*. — Provide one map support for each class-room in Grammar schools,

preferably behind the teacher's desk or opposite the windows, fixed close to the ceiling.

(11.) *Teacher's Closet.*—Provide a small closet for teacher's coat and hat, preferably opening from the class-room, but allowable from the wardrobe.

WARDROBES.

(1.) *Size.*—Wardrobes will adjoin school-rooms, and be from 4 feet 6 inches to 5 feet 6 inches wide.

(2 and 3.) *Windows and Doors.*—Outside light; two partly glazed doors, both connecting with school-room and not to corridor, and having no thresholds. Doors, double swung, 2 feet 6 inches wide, brass double acting butts, foot and hand plates, hooks or adjustable stops, to hold open, ventilation under door.

(4.) *Floors* as in school-room.

(5.) *Walls.*—Painted burlap up to hook rail; pole on iron brackets with hooks under and pins over, 56 in number, or a double pole with hooks. Shoe and umbrella rack below. (See drawing.) Walls above, plaster tinted. Height of lower pole, Kindergarten, 30 inches from floor; Primary, 36 inches to 40 inches; Grammar, 44 inches, 48 inches and 52 inches; distance between poles, 8 inches.

(6.) *Ceiling.*—Plaster. No tint.

(7.) *Light.*—One lamp. Ceiling outlets, electric.

(8.) *Heating and Ventilation.*—Heating direct; ventilation direct, $1\frac{2}{3}$ square feet area cross section.

CORRIDORS AND
VESTIBULES.

(1.) *Size.*—Not less than 8 feet wide for four rooms on a floor; not less than 10 feet for over four rooms, governed by length, access to stairs, etc.

(2.) *Windows.*—Outside light essential.

(3.) *Doors.*—Outer doors to open out, heavy butts, standard school lock, door-check, heavy hooks to hold open. Vestibule doors open out, heavy butts, pulls, push plates, hook to hold open, door-checks, no locks.

(4.) *Floors.*—Tile, terrazzo, or granolithic.

(5 and 6.) *Walls and Ceilings.*—Painted burlap, 7 feet high, untinted walls and ceilings. Finish burlap with painted line or a dado cap.

(7.) *Light.*—Ceiling lights, two lamps each, electric, also gas for emergency in corridors, on stairs and in vestibules.

(8.) *Heat and Ventilation.*—Heat direct. Ventilation, none.

(9.) *Sinks and Closets.*—On each floor above the first, one or two four-foot sinks and emergency closets; one for boys and one for girls. Floor washes in all corridors, preferably under the sinks.

STAIRCASES.

(1.) *Number and Arrangement.*—Determined by building laws, but fireproof construction in all cases.

(2.) *Material.*—The treads, North River stone on iron string, or concrete construction with granolithic surface. Rails of a simple pattern, easily cleaned; wall rails not necessary.

(3.) *Steps.*—About $6\frac{1}{2}$ or 7 inches by 10. Rail not less than 2 feet 8 inches on runs and 3 feet on landings.

SANITARIES.

(1.) *Size.*—General toilet-rooms in basement, in size approximating space for three water-closets for each school-room, two girls', one boys', and 36 inches of urinal for every school-room, arranged for convenient supervision and circulation. Slate sinks, the length about 12 inches, for each school-room, located preferably in the play-rooms. In large schools the number of closets may be considerably reduced, especially on boys' side. The above refers to mixed schools.

(2.) *Windows.*—Ample outside light.

(3.) *Doors.*—The doors arranged "in" and "out," with spring or door-check and stout brass hooks to hold open; glazed; half-doors to water-closets, except where ordered omitted.

(4.) *Floors.*—Asphalt; boys' drained to urinal, girls' to floor-wash.

(5.) *Walls.*—Salt-glazed brick, or other non-porous, inexpensive surface, 7 feet high, above, brick-painted.

(6.) *Ceiling.*—Untinted plaster. No basement ceiling need be furred level.

(7.) *Light.*—Ceiling lights in groups of three lamps.

(8.) *Heat and Ventilation.*—Heat direct. Ventilation through fixtures back of urinals, and 13 square inches local vent to each water-closet.

MASTER'S AND
TEACHERS'
ROOMS.

(1.) In each grammar school a room of about 240 square feet for the master, with a water-closet and bowl and book-closet adjoining. This room should be near the centre of the building, *i.e.*, on the second floor in a three-story building. In all schools a room or rooms for teachers,

averaging about 300 square feet for ten teachers, with one water-closet and bowl for each ten.

(2.) Where men as well as women are teachers, a separate small room with toilet accommodations for men.

BOOK-ROOM.

(1.) A general book-room should be provided in all schools, the size dependent on the grade or size of school, to be fitted with cupboards and shelves.

PLAY-ROOMS.

(1.) All free basement space to be arranged as play-rooms for boys and girls. Salt-glazed brick, 7 feet high, and painted or whitewashed brick or stone walls above. Asphalt floors, plaster ceilings.

PLUMBING FIXTURES.

(1.) *Water-closets.* — The basement water-closets for primary and grammar schools are syphon or washout, vitreous earthenware, or enamelled iron latrines, or short-hopper closets; elsewhere a heavy wash-down closet.

(2.) *Slate Partitions.* — Supported at ends with iron pipe from floor to ceiling, or, where ceilings are over 10 feet high, tied together and to the wall, to which doors are hung. (See drawing.)

(3.) *Urinals.* — The urinals will be of slate, floor slab and trough and back, without partitions, flushed automatically, through $\frac{7}{8}$ -inch perforated pipe, with hot and cold water; vented at bottom into space behind. (See drawing.)

(4.) *Sinks,* of black slate, self-closing cocks, set 15 inches on centres, cups and cup-hooks.

(5.) *Floor-washes* in sanitariums, as already mentioned, and in corridors above the basement under the sinks. (See detail.)

(6.) *Piping.* — (a.) Cast iron, must be in trenches in basement, running trap with direct indirect fresh-air inlets, clean-outs at every change of direction. Soils and vents exposed as far as possible, no asphaltum, but oil-tested red lead and three coats paint.

(b.) *Supplies.* — Exposed as far as possible; where covered may be lead, elsewhere brass, no nickel plate. Hot water for janitor's use in basement, for urinal, cooking-room, and, if convenient, for master's and teachers' toilets. Supply from boiler and from summer boiler, if any, or from a gas heater, or from cooking-room range.

(9.) *Fire Lines.* — In second-class buildings, and in first-class buildings over 3 stories high, one or more lines of 3-inch pipe.

SPECIAL ROOMS.

ASSEMBLY
HALLS.

(1.) Assembly halls should accommodate the whole number of pupils in smaller grammar buildings, but it is not customary in the larger schools to seat over 600 or 700. The platform should be capable of accommodating one, or, in the large schools, two classes, and should have removable stepped platforms of wood to take the benches. Galleries may be used where the hall is 2 stories in height. Ante-rooms near the platform are desirable, and a connection from adjoining class-rooms to the ante-rooms or directly to the platform. A dignified architectural treatment of the walls and a studied color scheme is expected. The hall floor will generally be level. The lighting and acoustics should be such as belong to a small lecture hall.

MANUAL TRAIN-
ING ROOMS.

(1.) *Size.*—Room should be approximately of dimensions and arrangements shown by drawings, for number of benches there given.

(2.) *Light.*—The windows should be as near full length as possible and on two adjacent sides. Artificial light should be provided in six groups of four lamps, as in class-rooms.

(3.) *Heat.*—Heat and ventilation the same as in class-rooms.

(4.) *Stock-room.*—Stock-room should contain at least 80 square feet, preferably long and narrow. Two 18-inch shelves should run around the room, 5 feet 6 inches and 6 feet from the floor.

(5.) *Wardrobe.*—Wall space for 30 hooks.

(6.) *Teachers' Closet.*—Teachers' closet should be large enough to be used also for storage of finished work, and should be fitted with all shelving possible as well as with the customary coat-hooks. An area of 40 square feet is adequate.

(7.) *Bookcases.*—Like those in class-rooms.

(8.) *Blackboards.*—Blackboard space of about 30 running feet, 4 feet high.

(9.) *Work-rack.*—About 28 feet long, 6 feet 6 inches high and 2 feet deep.

(10.) *Wash-bowl.*—A 3-foot sink is a convenience, but not a necessity.

(11.) *Finish of Room.*—A basement room should be finished as a shop, simple sheathed or whitewashed walls; if above the basement, as a class-room. The floor of wood.

COOKING-
ROOM.

(12.) *Furniture*.— (Not to be included in the contract.) The furniture comprises twenty-six to thirty benches and stools, four display frames, about 6 feet long and 30 inches wide, demonstration steps and guard rail, teacher's desk, table 4 feet by $2\frac{1}{2}$ feet with unfinished top, one desk chair and two common chairs. (For all of these see drawings.)

(1.) *Size*.— Should have an area of class-room size or more, if available.

(2.) *Light*.— As much light as a class-room, but not necessarily left hand; if located in a corner, light from two sides. Artificial light as in a class-room.

(3.) *Heat*.— Less heat is required than in a class-room, but the ventilation should be the same, with additional vent from the demonstration ranges.

(4.) *Wardrobes*.— Provision for 24 pupils, clothes hooks in separate lighted closet, and small teacher's closet.

(5.) *Interior Finish*.— Above basement, similar to school-rooms, blackboards 4 by 10 feet back of teacher's desk. Walls and ceilings painted in oils. A basement room may have painted brick walls. The floor of wood.

(6.) *Tile*.— The floor space occupied by the ranges and the wall space back of them (include sides if in recess), to a height of 6 feet, 6-inch unglazed red tile. (For all this see drawings.)

(7.) *Fittings*.— (a.) Work benches, accommodating 28 pupils, fitted with compartment for utensils, breadboard, etc.; a Bunsen burner with a hinged iron grill over it set on aluminum plates at each station; benches arranged in the form of an ellipse, or oblong, with access to centre from two sides; top of pine 26 inches wide; open underneath and supported on pipe standards. One section detached and fitted as a demonstration bench; a clear space of four feet all around. Dining table (furnished under another contract) is to be set in centre.

(b.) *Dresser*.— Ten feet long, in 3 sections, 4 adjustable shelves and glazed sliding, or hinged, doors at top; one set of 3 drawers and 2 cupboards on lower part.

(c.) *Fuel Box*.— In 2 compartments, each about 24 inches square and 30 inches deep, with hinged lids; small shelf in one section.

(d.) *Bookcase.* — Similar to those provided in class-rooms.

(e.) *Sink.* — 5 feet long; 2 cold and 2 hot water cocks; drip shelves 24 inches long at each end of sink. Sinks should be near ranges.

(f.) *Hot-water Boiler.* — (See instructions in plumbing.)

(g.) *Coal and Gas Ranges.* — A six-hole coal range and a similar gas range, with hood provided and set on a hearth previously mentioned.

(h.) *Refrigerator.* — Will be a part of the furniture. (Furnished under another contract.)

KINDERGARTEN.

Kindergarten. — Placed on first floor, preferably a corner room with a south or southeast exposure, and of a size to take a circle 16 feet in diameter with 4 feet outside; and an adjoining room with an area of about 200 square feet, connected. If a corner class-room is used, light from two sides; the smaller room should be well lighted. The other general arrangements and fittings of rooms should be similar to the class-room, except that a tackboard covered with burlap at top of blackboard should be provided. Two ordinary bookcases or one large one should be provided in class-room. A store closet with 12-inch shelves should be provided for kindergarten supplies, and a closet sufficiently large for the clothing of three teachers should be provided; the wardrobe should be similar to those of class-rooms, with accommodation for sixty hooks. It would be convenient, but not essential, to provide a water-closet and a slate sink adjoining kindergarten. On the floor of main kindergarten regulation circles and lines for kindergarten games should be painted in parti-colors. (See standard plan.)

HEATING, VENTILATION, ELECTRIC SYSTEMS.

HEATING AND VENTILATION

GRAVITY SYSTEM.

(1.) *Heat-ducts for School-rooms.* — (a.) Size. Allow about one square foot area cross section for each nine occupants.

(b.) Location in corner room to be within 10 feet of outside wall.

(c.) Location in room with one outside wall to be on inside wall near middle.

(d.) Bottom of opening to be about eight feet above floor.

(e.) Opening to be same area as duct.

(f.) No guard will be put in.

(g.) The opening will be finished inside like adjoining wall.

(2.) *Vent-ducts for School-rooms.* — (a.) Size. Allow about one square foot area cross section for each ten occupants.

(b.) Location in corner room at inside corner of room, and where possible on same wall as heat-duct.

(c.) Location in room with one outside wall to be on inside wall near middle.

(d.) The opening will be full size of vent-duct.

(e.) The floor will be carried into the bottom of duct and baseboard carried in around. The inside of duct to be finished to match adjoining wall.

(f.) No guard will be put in.

FAN SYSTEM.

(1.) *Heat-ducts for School-rooms.* — (a.) Size. Allow about one square foot area cross section for each fourteen occupants.

(b.) Location in corner room to be within 10 feet of outside wall.

(c.) Location in room with one outside wall to be on inside wall near middle.

(d.) Bottom of opening to be about 8 feet above floor.

(e.) Opening to be one-third larger than area of duct.

(f.) No guard will be put in.

(g.) The opening will be finished inside like the adjoining wall.

EXHAUST

FAN

SYSTEM.

(1.) *Vent-ducts for School-rooms.* — (a.) Size. Allow about one square foot cross section for each 16 occupants.

(b.) Location in corner rooms at inside of room, and where possible on same walls as heat-duct.

(c.) Location in rooms with one outside wall, on inside wall near middle.

(d.) The opening will be full size of vent-duct.

(e.) The floor will be carried into the bottom of duct and baseboard carried in around. The inside of duct will be finished to match adjoining wall.

(f.) No guard will be put in.

TOILET-

ROOMS

VENT.

(1.) Each doorway into toilet-rooms is to have an opening either through lower panels with register face or underneath the door, equal in net area to the size of vent-duct from room.

(2.) Size of vent-duct from toilets to be equal to 12 inches each closet, and each 16 inches of urinal space.

WARDROBE
VENTS.

(1.) Each room to have a vent-duct $1\frac{1}{2}$ feet area cross section, with top and bottom registers.

(2.) The doorway into rooms at end farthest from vent-duct is to have free opening from school-rooms provided as for toilet-rooms, so that air can pass from school-room through wardrobe and out vent-duct.

ELECTRIC
WORK.

(1.) *Service.* — (a.) This should enter basement underground at location to be determined by reference to Edison mains and building arrangements.

(b.) Main switch, cut-outs and metre should be located as close to service as possible and placed in a cabinet.

(2.) *Conduits.* — (a.) All wires to be run in an iron conduit concealed, except conduits for mains in basement.

(b.) Tap circuit conduits to be run in a space of 2 inches below floor beams and above wire lathing wherever concrete construction is used. With terra-cotta construction conduits to be laid on top of blocking in cinder filling.

(3.) *Wire Slot.* — (a.) Near each end of a large building, or near the centre of a small one, either an open shaft at least 24 inches by 30 inches, or a slot in wall 4 inches deep and 18 inches wide, should be provided from a point 4 feet below basement ceiling to a point above ceiling of top floor.

(4.) *Cabinets.* — All cabinets to be furnished by wiring contractor, but finished by the general contractor.

(5.) *Cutting.* — All cutting and patching to be done by the general contractor.

(6.) *Outlets.* — (a.) Class-rooms to be provided with 6 four-light ceiling outlets, controlled by three switches, and one light for teacher.

(b.) Wardrobes to have 1 two-light ceiling outlet, controlled by switch in class-room.

(c.) Corridors to be lighted from ceiling wherever possible.

(d.) Height of side outlets in rooms to be 6 feet, and in corridors 6 feet 4 inches. Switch outlets to be 4 feet.

(e.) Switches in corridors, play-rooms, and pupils' toilet-rooms to be operated by private key.

(7.) *Fixtures.* — Fixtures in class-rooms to be of special design to combine a direct and diffused light.

(8.) *Gas.*—Gas outlets to be provided in all corridors, vestibules, stairways, and boiler-room; all except vestibule to be wall outlets. Gas-piping to be included in the Engineer's work.

(9.) *Stereopticon.*—All grammar halls and high schools to be provided with an electric stereopticon.

(10.) *Clocks and Bells.*—(a.) All schools to be provided with a system of clocks, operated by a master clock.

(b.) All primary schools to be provided with a system of signal bells, operated by a push-button.

(c.) In all grammar and high schools the bell system to be operated automatically by master clock, according to prearranged programme.

(11.) *Telephones.*—In all schools, each classroom, hall, teachers' room, and boiler-room, to be connected to master's office, or to room occupied by the first assistant, by a telephone system.

(12.) *Auxiliary Fire-alarm.*—At one or more points in each floor there are to be located push-buttons connected with an auxiliary fire-alarm box, which is a part of the city fire-alarm system.

NOTE.—Drawings showing special fittings for both plumbing and interior fittings will be found in Appendices VIII. and IX.

The Board are now studying the high school requirements for the Charlestown High and the Girls' Latin, and, while not expecting to be able to determine as definitely as in the case of primary and grammar schools, believe that they will be able to fix a standard of size and cost based on the number of pupils to be accommodated. As with the grammar schools, the small buildings, requiring halls, manual training rooms and cooking-rooms of capacity almost if not quite equivalent to the larger buildings, cost more in proportion than the large grammars, so, with high schools, the cost per pupil would be considerably higher in a building for 300 than in one for 1,000. Each high school must have an outfit, such as laboratories, etc., which are not materially increased even for a considerably larger number of pupils. The result of the Board's study with the architects of the Normal group and of the Charlestown High will be given another year.

VI.

FINANCIAL STATEMENT.

As already stated in the first portion of this report, the completion of the items there noted will exhaust the appropriation that was available under chapter 473 of the Acts of 1901. A complete statement of the expenditures in connection with the schools will be found in the report of the Auditor, and a brief statement of expenditures from the appropriation for Land and Buildings for Schools and for Repairs in Appendices.

To continue the work of the Board and complete the high school items on the list and to provide each year the permanent new school buildings that are essential for the welfare of the school children, we are asking the Legislature to authorize certain further loans within the debt limit. More especially we are asking for the means to complete the Mechanic Arts High and make it capable of accommodating easily 1,200, and if crowded, as at present, 1,700 boys; to build the long-needed Normal School, with accommodation for 300 men and women; the model school to serve as a training school for the Normal, and to accommodate nearly 1,000 children; the Girls' Latin School, to accommodate 600, and the Charlestown High to accommodate 500. The land for these buildings is already purchased, and it is only the buildings themselves for which money is needed. The Board have asked for \$1,000,000 in 1905 and \$500,000 annually for the three succeeding years.

VII.

CONCLUSION.

The work thus far completed by the Board has been criticised in detail in the earlier portion of this report. From this it will be seen that although many of the buildings first erected by this Board were, in their judgment, extravagant, they were not more extravagant than many buildings erected under the old regime, and the Board are fully aware of the causes of their cost, and are able to avoid these errors in the buildings now in hand.

In the matter of prompt execution of work, although some few items have been carried through promptly, notably those which, like the Ticknor, were under a single contract and a heavy forfeiture, the Board have not as yet obtained the results which they hoped for in the prompt execution of drawings and complete erection and equipment of buildings within what seems to them a reasonable time.

Nine buildings have been let during 1904, and of these only two are now complete; one is overdue, and the remainder are due at various times from the 1st of May to the 7th of September. We have not yet succeeded in getting our working drawings and specifications made in a short time, and possibly, considering what complete drawings and specifications are required, the Board have expected more than they have a right to. Four architects were appointed in the first two weeks of August, three of them having to make plans for ten-room primary buildings and one for a twenty-four-room primary building. Only one of these four buildings was let before the 1st of January. The Board still believe that a single contract with a reasonable time for completion, and a forfeiture and bonus clause which can be readily enforced, is the most advantageous contract for the city.

The work of sanitation has been carried forward steadily, and the Board now believe that practically every system which is a danger to health has been replaced by a modern and efficient system.

The question of protection against fire has been carefully studied, and the Board are prepared to equip the older buildings with means of escape in case of fire, and proceed to make the basements safer from danger from fire.

The Board in their dealings with the school authorities have confined themselves this year almost wholly to the

Superintendent of Schools, who has been most helpful and efficient in helping the Board in their work, and the Board feel that in dealing with an officer so thoroughly well equipped as the Superintendent that they are less liable to make a mistake than when dealing with an elective body, such as the present School Committee.

From the Schoolhouse Custodian the Board have also received most valuable advice and efficient help, both in planning and arranging the buildings so they shall be convenient for janitor's service and in remedying defects in the older buildings. As intimated in the last report, they believe that a still closer relationship between the Board and the Schoolhouse Custodian would be an advantage to the City of Boston, as the janitors are responsible for the care of the buildings which the Board erect and repair.

No change has been made in the draughting and engineering force. The number of men is hardly sufficient for the work that must be done during the summer, and we have been obliged frequently to work the force over time, but during the winter the force is sufficient to do the regular work. Besides making all the plans for the fire escapes, the new sanitation, the major alterations and repairs, cabinet work and work in connection with portables, they work with the architects employed on the new buildings, giving information, blue prints of standard fittings and assistance in connection with specifications. All this work has been done by one architect and three draughtsmen.

The engineering division is constantly employed in giving grades, levels, making borings, giving information about sewers, gas and water mains and grades. They see that all sewer and drain pipes are properly laid and a record of their location and grades kept. One hundred and fifty-two visits were made by two or more men to the different schools in 1904. Fifty-five borings were made in four lots; working drawings were made for the grading and finishing of various school yards. A photographic record is kept of the progress of work on the new buildings for the information of the Commissioners and information obtained for the Board in connection with assessed valuations of land. This division also takes care of any land or buildings which temporarily need an agent. Thirty-five houses or suites and one business block have been thus cared for. In addition to this, the architects and the engineers take off all areas and cubes of the new buildings, so that the Board may be assured that all are taken off on exactly the same basis and are not dependent on figures computed by the different architects.

A series of tests has been conducted and is still in operation to determine the desirability of an attempt to moisten the air in the school buildings, with a view to enable us to maintain a low temperature, to prevent the accumulation of dust and to preserve in better condition everything that is of wood in connection with our buildings, a full report of which is contained in Appendix VII.

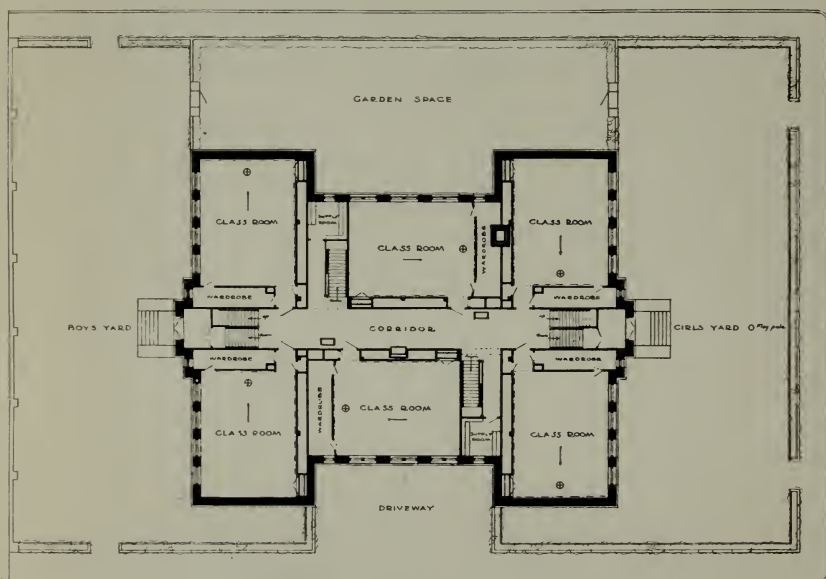
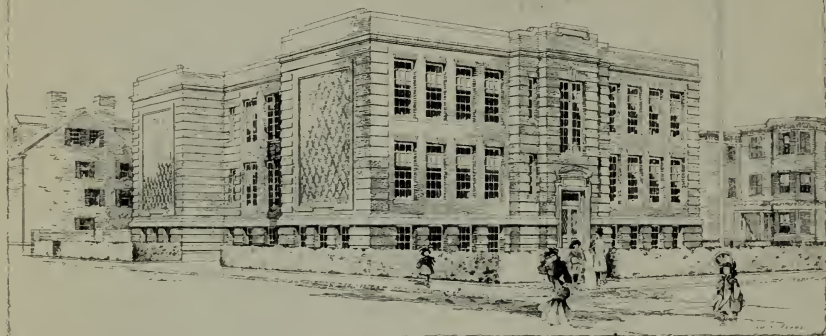
In settling equitably the various disputes that have arisen between the men working for the city and the architects or this Board, the advice and assistance of the Corporation Counsel has been of great benefit.

In conclusion, the Board wish to express to your Honor their deep appreciation of your constant support in their endeavor to carry out their work in the best interests of the City of Boston.

Respectfully submitted,

R. CLIPSTON STURGIS,
JOSEPH J. CORBETT,
CHARLES LOGUE.

JAMES OTIS SCHOOL
EAST BOSTON
WINSLOW AND BIGELOW
ARCHITECTS



FIRST FLOOR PLAN

SCALE 1" = 10' 0" 10' 20' 30' 40'

⊙ INDICATES TEACHER'S DESK
— INDICATES PUPIL'S DESK
— OUT AND BACK INDICATES BLACKBOARD

APPENDIX I.

NOTES ON NEW BUILDINGS.

PRIMARY SCHOOL-HOUSE, LYMAN DISTRICT, EAST BOSTON.

The position and general arrangement of this building were described in the last Annual Report, but no plan or perspective given, as we were obliged to appoint another architect and start afresh. The plan of the building and its arrangement on the lot having been determined by the Board before the appointment of Mr. Faxon, the same general plan was still followed, and no changes made, except details. Owing to the time lost, the Board endeavored to save time by letting the building in a single contract with a forfeiture and bonus clause. This contract was \$107,213, which, as explained in the earlier portion of the report, is above the usual limit.

The building is so placed as to give two sunny paved playgrounds and a small garden space, and to give the class-rooms sunny aspects. The contract for the building includes all the trades within the building and the grading, fencing, and planting of the lot. Owing to the nature of the soil, practically all the filling, both gravel and loam, has to be brought to the lot. The building is of brick and stone, fireproof throughout, with a flat roof. The basement contains the play-rooms, sanitariums and the heating apparatus. There are six rooms each on the first and second floors, which are of small grammar size, 24 by 32.

With this accommodation the limit of area would be 9,216 square feet, the limit of cube for 12 rooms at 35,000, 420,000 cubic feet per room, and the cost at 22 cents per cubic foot would be \$92,400. The area of the building on the first floor is 8,772 square feet. The cubical contents are 411,645 cubic feet. It will be seen that these are all within the limit set by the Board, but the cost, which is \$107,213, very largely over-runs the cost per cubic foot that is allowed, owing, as previously stated, to the character of the soil and the short term and forfeiture contract.

The heating and ventilating and the electric work are practically as described in the last report.

PRIMARY SCHOOL-HOUSE, TUCKERMAN SITE.

This school-house occupies the old Tuckerman site and additional land to the north of it, thus occupying the whole of the tri-

angle, except the point, which is a public park. The lot is long and narrow, and the building had to be very carefully designed to be adapted to the land and yet leave, even on the increased lot, sufficient space for the playgrounds.

The building is of brick and stone and of first-class fireproof construction throughout. The basement contains the sanitariums for boys and girls, a common play-room and the heating apparatus.

There are five rooms each on the first and second floors. The area of the building on the first floor is 6,653 square feet. Twice the area of the class-rooms is 7,200 square feet. The plan is therefore economically arranged. The cubical contents are 306,748 cubic feet, the outside limit given being 350,000; it has therefore 30,674 cubic feet per class-room, which is nearly the low limit. The total contracts are \$77,065.90, consequently the cost per cubic foot is considerably above the 22 cents allowed, and the cost is just over the limit, \$77,000.

Heating and Ventilating. — System: The system for steam in this building will be low pressure, gravity return. The system for air will be gravity. The ventilation will be stimulated by means of aspirating coils placed in the vent-flues.

Boilers: There will be two 14-section No. 5½ Mills cast-iron sectional steam boilers, and also one 9-section No. 2 cast-iron sectional steam boiler for summer use.

Radiation: There will be a total of 5,427 square feet of heating surface in the building. The greater part of this will consist of indirect pin radiators located in brick heating chambers in the basement. Direct radiation will be placed in the small rooms and corridors throughout the building.

Temperature Control: The temperature of the air in the school-rooms will be controlled by means of hand-mixing dampers operated by the teachers.

Electric Work. — In this school all rooms are to have electric lights, there being a total of 206 outlets and 365 lights.

There are 14 corridor and door bells, and also a complete system of telephones, with twelve stations and an electric clock system, having one master clock controlling eleven secondary clocks in the class-rooms and boiler-room.

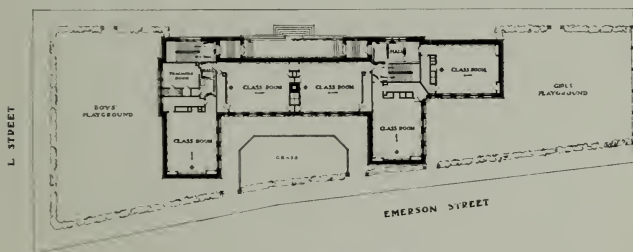
PRIMARY SCHOOL-HOUSE, GLENWAY LOT.

This school-house is placed on a portion of a lot owned by the city, on the corner of Glenway street, Blue Hill avenue and McLellan street. This site was selected after land had been advertised for and three hearings held in regard to possible locations in other parts of the district. It was found that land centrally located in the district was already improved, and would have been extremely expensive to purchase; that land near the further end of the district was strongly objected to by a very large number of responsible citizens, and their objections seemed to the Board to be well founded. It was therefore decided to build on the lot owned by the city, the only objection to which

NEW PRIMARY SCHOOLHOUSE
TUCKERMAN SCHOOL SITE
CHARLES H. CUNNINGHAM, ARCHITECT



EAST FOURTH ST.



FIRST FLOOR PLAN AND LOT

SCALE

NOTES
 * INDICATES TEACHERS DESK
 — INDICATES WAY FLOOR PLAN
 — DOTTED LINE INDICATES
 BACKYARD

was the fact that it was on the edge of the district and not near the centre. The location had the approval of the Superintendent and the master.

The building was so placed as to occupy the highest part of the land, to give the class-rooms a sunny aspect and to avoid interfering with the two buildings now on the lot, both of which can remain for the present. The contract for this building includes the complete grading, paving, planting, etc., of the whole lot, not only the land around the new building, but the land about the existing old buildings.

The building is of brick, with a very small amount of stone, part of the outside and the eaves being finished in cement. It has a pitched roof, covered with slate, and is of first-class fire-proof construction throughout.

The basement contains the play-rooms, the sanitariums, and the heating apparatus, and covers more area than the first floor. One of the play-rooms is so arranged that it can be readily utilized as kindergarten space if required. There are five rooms each on the first and second floors. As to accommodation, this building is exactly the same as that last described, except for the increased basement space. The limit of price set by the Board would be the same also. The limit of area would be 7,200 square feet, and the limit of cost would be 10 class-rooms at 35,000 cubic feet per room, at 22 cents, or \$77,000. The actual area of the building on the first floor is 6,705 square feet, but the area of the basement, which includes the play-room previously mentioned as being available for kindergarten purposes, is 7,965 square feet. The cubical contents are 324,180 cubic feet.

The four contracts were not let February 1st, but the total will probably over-run the limit, \$77,000, owing to the unusual expense of the large lot.

Heating and Ventilating. — System: The system for steam in this building will be low pressure, gravity return. The system for air will be gravity. The ventilation will be stimulated by means of aspirating coils placed in the vent-flues.

Boilers: There will be two horizontal return tubular boilers of 51 horse power each, 54 inches in diameter, and 15 feet 3 inches long, and one 9-section No. 2 cast-iron sectional steam boiler for summer use.

Radiation: There will be a total of 5,253 square feet of heating surface in this building. The greater part of this will consist of indirect pin radiators, located in brick heating chambers in the basement. Direct radiators will be placed in the small rooms and corridors throughout the building.

Temperature Control: The temperature of the air in the school-rooms will be controlled by means of hand-mixing dampers operated by the teachers.

Electric Work. — In this school all the rooms are to have electric lights, there being a total of 198 outlets and 373 lights.

There are nine corridor and door bells, and also a complete

system of telephones, with thirteen stations and an electric clock system, having one master clock controlling twelve secondary clocks in the class-rooms and boiler-room.

PRIMARY SCHOOL—HOUSE, LEWIS DISTRICT.

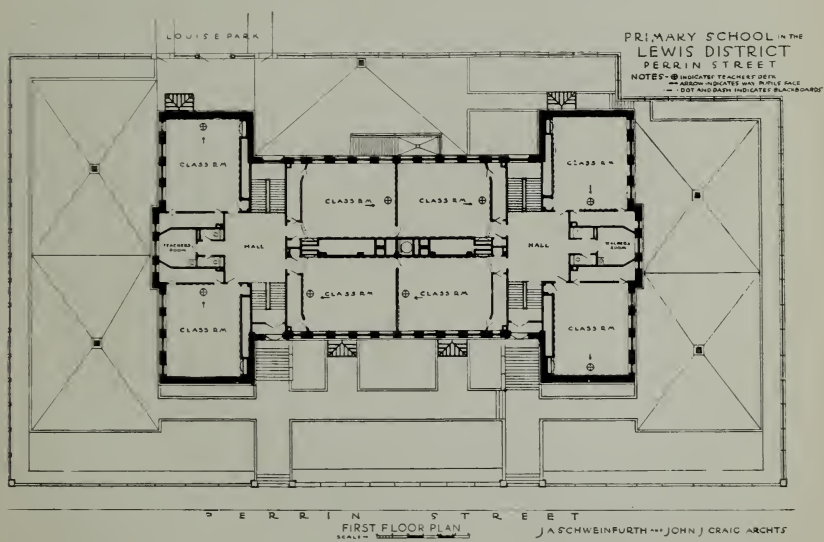
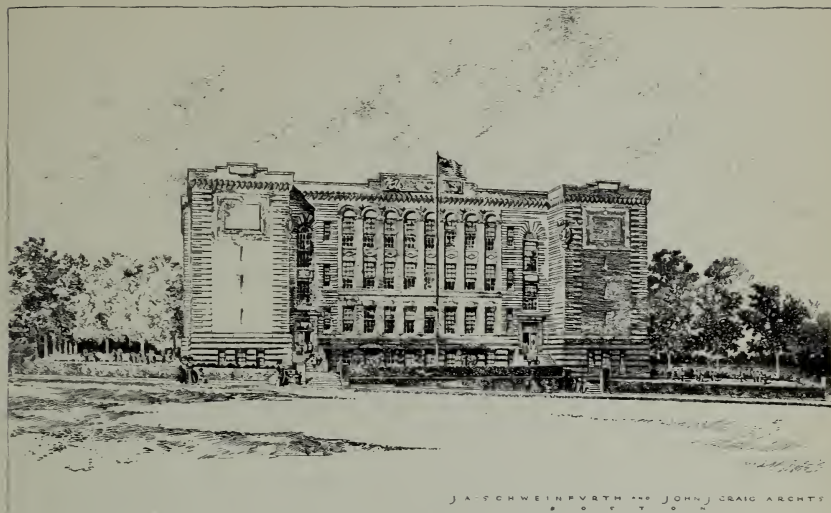
Two lots on Perrin street seemed to the Board the best of the various lots that were offered in response to the advertisement for land for this building. The land eventually selected by the Board was taken because it enabled them to build a plan giving 8 class-rooms on a floor, whereas on the other lot the largest plan that was possible was 6 rooms. We wished to build a building of at least 18, and preferably 20, rooms. With 8 rooms on a floor, we could build a 24-room building, which, considering the rapid growth in this neighborhood, seemed on the whole the wisest thing to do. With the advice and consent of the Superintendent this was therefore decided upon.

The building is of brick and limestone, of three stories, and first-class fireproof construction throughout. It is a compact plan and modelled on the old Emerson School in East Boston, that is, practically two 4-room plans, placed back to back, having 4 staircases, and doors for use in case of emergency in the wall dividing the two groups of rooms. Of the 4 staircases, one on each side goes to the basement, and one on each side serves for the entrance, thereby avoiding the complications which are apt to exist where entrance and staircases both up and down are in the same place.

The basement contains the toilets for boys and girls, 4 in all, a large common play-room, and a smaller separate play-room for girls, and the heating apparatus.

There are 8 rooms each on the first, second and third floors. There are 2 teachers' rooms on the first floor and 2 on the third floor and 2 book-rooms in the space corresponding on the second. The building has an area of 10,945 square feet, the limit being 11,420, thus showing a compact plan. Its cube is 708,607, the limit being 720,000. Taking as a basis the low allowance of cube for a big building, 30,000 per room, and taking the low price per cubic feet, 22 cents, the building should cost not over \$158,400. The building will be let in March.

Heating and Ventilating.—System: The system will be a combination of pump and receiver and gravity return system. During the hours when school is in session, the water of condensation will be returned to the boiler by means of the pump. At night, when fires are banked and the steam pressure has dropped, the water will be returned directly to the boilers by means of by-pass valves. Air will be furnished by a plenum fan, driven by a steam engine running on 25 pounds steam pressure. When this pressure is required, the building will be heated by steam at a maximum of 5 pounds pressure, taken through a reducing pressure valve. The ventilation will be stimulated by means of aspirating coils placed in the vent flues and heated by exhaust



steam from the engine and pump. The main ducts in this building are of masonry construction below the basement floor, instead of galvanized iron. It is hoped that this will prove a better and more permanent construction.

Boilers: There will be 2 horizontal return tubular boilers of 96 horse-power each, 66 inches in diameter and 18 feet 4 inches long. In addition there will be a small cast-iron sectional boiler for summer use.

Radiation: There will be a total of 8,352 square feet of heating surface, comprising indirect radiators in a main heating chamber, supplementary radiators placed at the base of the fresh air ducts to the school-rooms and direct radiators located in the small rooms and corridors.

Engine: There will be installed a 13-inch by 7-inch low pressure, vertical, centre-crank, belted engine.

Fan: There will be installed a 9-foot, $\frac{3}{4}$ -housing, steel plate, belted fan, with bottom horizontal discharge. The fan is to be run at 115 revolutions per minute and deliver 36,000 cubic feet of air per minute.

Temperature Control: Automatic temperature control will be installed in all class-rooms.

Electric Work.—In this school all the rooms are to have electric lights, there being a total of 377 outlets, and 767 lights.

There are 19 corridor and door bells and also a complete system of telephones with 29 stations, and an electric clock system having one master clock controlling 25 secondary clocks in the class-rooms and boiler-room.

PRIMARY SCHOOL-HOUSE, HOWARD-AVENUE LOT.

The addition to the Howard-avenue School called for in the list of 42 items was replaced by a new building on the Howard-avenue lot, which is a large lot with plenty of space at the back. It was not possible, however, to make a plan with 4 rooms on a floor and but 2 stories high to give the 8 rooms required, and the Board were obliged to build a 3 story plan with 3 rooms on a floor, thus giving 1 more room than the number called for by the order.

The limit of area for 3 rooms on a floor would be 4,320 square feet. As we are obliged to have 2 staircases, although there are but three rooms on a floor, it was impossible even with the most careful planning to keep down to the limit, and the actual area is 4,621. The cube figured on the larger allowance, 35,000 cubic feet per room, is 315,000 cubic feet. The actual cube is 305,664. Taking the cube allowed at 22 cents the cost should not exceed \$69,300.

The building is of brick and terra-cotta, of first-class fireproof construction throughout. It contains in the basement the sanitariums for boys and girls, play-rooms and the heating apparatus, and on the first, second and third floors three rooms each.

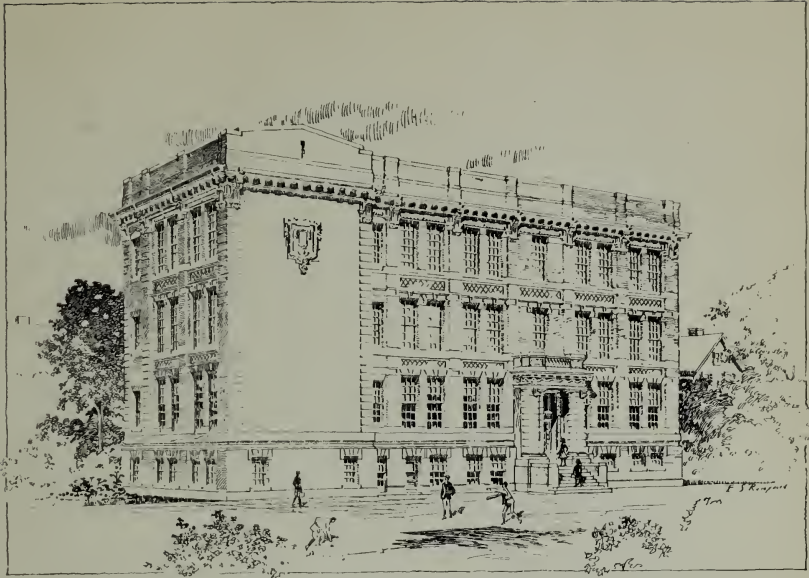
Heating and Ventilating. — System: The system for steam in this building will be low pressure, gravity return. The system for air will be gravity. The ventilation will be stimulated by means of aspirating coils placed in the vent flues.

Boilers. — There will be two 16 section No. 5 Mills cast-iron sectional steam boilers and one small cast-iron sectional boiler for summer use.

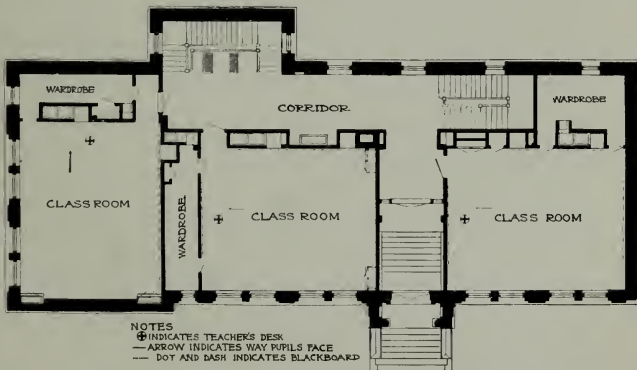
Radiation. — There will be a total of 4,803 square feet of heating surface in this building. The greater part will consist of indirect pin radiators located in brick heating chambers in the basement. Direct radiators will be placed in the small rooms and corridors throughout the building.

Temperature Control. — The temperature of air in the school-rooms will be controlled by means of hand-mixing dampers operated by the teachers.

Electric Work. — In this school all the rooms are to have electric lights, there being a total of 163 outlets and 313 lights. There are 12 corridor and door bells and also a complete system of telephones with 11 stations, and an electric clock system having one master clock controlling nine secondary clocks in the classrooms and boiler-rooms.



PRIMARY SCHOOLHOUSE
HOWARD AVENUE SCHOOL LOT.
W. H. Mc GINTY, ARCHITECT.



FIRST FLOOR PLAN

APPENDIX II.

 APPROPRIATION FOR LAND AND BUILDINGS FOR SCHOOLS.

I.

The following statement shows the expenditures on account of the appropriation from February 1, 1904, to February 1, 1905:

| | |
|--|-----------------------|
| February 1, 1904, Balance of Appropriation | . \$1,780,333 12 |
| Appropriation for 1904 and 1905 | . . . 1,500,000 00 |
| | <hr/> |
| | <u>\$3,280,333 12</u> |

EXPENDITURES.

Expended for Sanitation and Heating :

| | |
|----------------------------------|--------------|
| Benjamin Pope School . . . | \$6,301 70 |
| Brewster School . . . | 3,507 74 |
| Charles Sumner School . . . | 3,645 60 |
| Dearborn School . . . | 1,005 95 |
| Eliot School (plumbing) . . . | 1,281 49 |
| Eliot School (heating) . . . | 10,283 74 |
| Emerson School (East Boston), | 5,294 25 |
| English High School . . . | 2,026 50 |
| Girls' High School . . . | 15,436 66 |
| Gaston School . . . | 3,816 00 |
| Harvard Hill School . . . | 5,408 41 |
| Hawes Hall and Simonds Schools, | 12,253 42 |
| Hull School . . . | 1,775 65 |
| Lincoln School . . . | 23,295 84 |
| Mt. Vernon School . . . | 6,154 63 |
| Mary Hemenway School . . . | 1,800 00 |
| Old Gibson School . . . | 3,578 19 |
| Phineas Bates School . . . | 68 75 |
| Plummer School . . . | 9,720 63 |
| Roger Wolcott School . . . | 1,573 00 |
| William Wirt Warren School . . | 3,126 72 |
| Winchell School . . . | 691 00 |
| | <hr/> |
| | \$122,045 87 |
| <i>Carried forward</i> | <hr/> |
| | \$122,045 87 |

Brought forward. . . \$122,045 87

Ventilation of Sanitaries :

| | |
|---------------------------------|------------|
| Comins School . . | \$144 45 |
| George-street School . . | 41 45 |
| Glenway Annex School . . | 18 40 |
| Mary Hemenway School . . | 348 14 |
| Mayhew School . . | 61 65 |
| Norcross School . . | 66 90 |
| Roger Wolcott School . . | 998 00 |
| Sherwin School . . | 320 00 |
| West Concord-street School, . . | 32 50 |
| William Bacon School . . | 35 70 |
| | <hr/> |
| | \$2,067 19 |

\$124,113 06

Amounts expended for Fire Protection :

Installing and putting under ground Auxiliary
Fire-alarm System :

| | |
|---------------------------------------|------------|
| Bigelow School . . | \$246 82 |
| Drake School . . | 256 19 |
| Hawes Hall and Simonds
Schools . . | 277 04 |
| John A. Andrew School, . . | 273 66 |
| Lawrence School . . | 203 82 |
| Mary Hemenway School, . . | 287 00 |
| Shurtleff School . . | 256 96 |
| Ticknor School . . | 235 51 |
| | <hr/> |
| | \$2,037 00 |

*To Changing all Outside Doors to
Swing Out :*

| | |
|---------------------------------|--------|
| Albert Palmer School . . | \$9 00 |
| Bailey-street Annex School, . . | 9 55 |
| Christopher Gibson School, . . | 15 00 |
| Charlestown High School . . | 23 95 |
| Edward Everett School . . | 196 65 |
| Gilbert Stuart School . . | 25 25 |
| Harvard Grammar School, . . | 33 39 |
| Hancock School . . | 22 63 |
| Hugh O'Brien School . . | 21 30 |
| Harris School . . | 38 93 |
| Hull School . . | 45 96 |
| Henry L. Pierce School . . | 218 98 |
| Lewis School . . | 58 38 |
| Lyceum Hall School . . | 17 30 |
| Minot School . . | 13 93 |
| Mary Hemenway School . . | 13 32 |
| Normal School . . | 57 84 |

Carried forward. . . \$821 36 \$2,037 00 \$124,113 06

| | | | |
|---|----------|------------|--------------|
| <i>Brought forward.</i> | \$821 36 | \$2,037 00 | \$124,113 06 |
| Norcross School | 154 60 | | |
| Old Dorchester High School. | 23 50 | | |
| Old East Boston High School. | 23 97 | | |
| Oak Square School | 8 30 | | |
| Prince School | 55 29 | | |
| Portable No. 8 | 11 00 | | |
| Quincy School | 100 84 | | |
| Rice School | 6 00 | | |
| Sherwin School | 60 24 | | |
| Thetford-street School | 18 70 | | |
| Thomas N. Hart School | 43 55 | | |
| Wells School | 61 95 | | |
| W. L. P. Boardman School, | 8 00 | | |
| | | 1,397 30 | |
| Fire Extinguishers | | 918 59 | |
| Fire Escapes : | | | |
| Advertising | \$57 75 | | |
| Bunker Hill Grammar and Primary Schools | 3,995 30 | | |
| Baldwin School | 1,760 00 | | |
| Bartlett-street School | 927 00 | | |
| Comins School | 2,438 81 | | |
| Drake School | 1,294 00 | | |
| Everett School (city) | 67 00 | | |
| Eliot School | 779 40 | | |
| Emerson School (city) | 577 80 | | |
| George-street School | 1,281 00 | | |
| Grant School | 289 90 | | |
| Girls' High School | 1,864 00 | | |
| Hawes Hall School | 680 60 | | |
| Mather School | 1,904 00 | | |
| Mayhew School | 1,116 70 | | |
| Old Roxbury High School | 1,520 00 | | |
| Phillips-street School | 1,173 00 | | |
| Roxbury High School | 837 00 | | |
| Simonds School | 450 00 | | |
| Skinner School | 1,544 00 | | |
| Somerset-street School | 129 90 | | |
| Tyler-street School | 919 75 | | |
| West Concord-street School | 1,962 00 | | |
| Wells School | 2,397 00 | | |
| | | 29,965 91 | |
| | | | 34,318 80 |
| <i>Carried forward.</i> | | | \$158,431 86 |

| | | | |
|--|--------------|--------------|----------------|
| <i>Brought forward</i> | | \$158,431 86 | |
| <i>Expended for sites, erecting, grading and planting of lots and furnishing of new buildings.</i> | | | |
| Addition to Francis Parkman School— | | | |
| Francis Parkman School. Total cost of building and furnishing, \$40,854.16): | | | |
| Building | \$27,001 04 | | |
| Furnishing | 1,012 60 | | |
| | | | 28,013 64 |
| Chapman School: | | | |
| Addition to yard | | | 4,327 69 |
| Extension Mechanic Arts High School: | | | |
| Site | \$107,716 18 | | |
| Building | 6,000 00 | | |
| | | | 113,716 18 |
| Girls' Latin School: | | | |
| Site | | | 55,779 32 |
| Grammar School, City Point
(Oliver Hazard Perry School): | | | |
| Building | \$129,432 95 | | |
| Furnishing | 50 80 | | |
| | | | 129,483 75 |
| Grammar School, Dearborn District
(Dearborn School): | | | |
| Building | \$82,269 33 | | |
| Site | 370 25 | | |
| | | | 82,639 58 |
| Grammar School, Lowell District
(Jefferson School): | | | |
| Building | \$83,941 50 | | |
| Furnishing | 6,297 23 | | |
| | | | 90,238 73 |
| Grammar School, Mather District
(Mather School): | | | |
| Building | | | 226,921 28 |
| Grammar School, Old Gibson Site
(Oliver Wendell Holmes School): | | | |
| Site | \$127 70 | | |
| Building | 115,294 82 | | |
| | | | 115,422 52 |
| <i>Carried forward</i> | | | \$1,004,974 55 |

| | | |
|--|-------------|------------|
| <i>Brought forward</i> | \$1,004,974 | 55 |
| Grammar School, Roger Clap District
(William E. Russell School. Total cost of
site, building and furnishing, \$235,753.60) : | | |
| Building | \$1,269 | 12 |
| Furnishing | 1,074 | 99 |
| | <hr/> | 2,344 11 |
| Grammar School, Washington Allston District
(Thomas Gardner School) : | | |
| Building | 94,860 | 54 |
| Model School : | | |
| Site | 55,779 | 31 |
| New Ticknor School
(John Boyle O'Reilly School) : | | |
| Site | \$115 | 00 |
| Building | 102,089 | 22 |
| Furnishing | 3,102 | 33 |
| | <hr/> | 105,306 55 |
| Normal School (paid by Execution of Court for
plans ordered by School Committee) : | | |
| Plans | 2,310 | 78 |
| Normal School : | | |
| Site | 55,779 | 31 |
| Primary School, Christopher Gibson District
(Marshall School. Total cost of site, building
and furnishing, \$146,623.39) : | | |
| Site | \$321 | 75 |
| Building | 288 | 67 |
| Furnishing | 384 | 01 |
| | <hr/> | 994 43 |
| Primary School, Eliot and Hancock Districts
(Christopher Columbus School) : | | |
| Site | \$50 | 00 |
| Building | 140,773 | 58 |
| Furnishing | 1,126 | 37 |
| | <hr/> | 141,949 95 |
| Primary School, Emerson District
(Paul Jones School. Total cost of site, build-
ing and furnishing, \$138,159.20) : | | |
| Building | \$44,962 | 91 |
| Furnishing | 3,238 | 17 |
| | <hr/> | 48,201 08 |
| Primary School, George Putnam District
(Ellis Mendell School) : | | |
| Building | \$45,346 | 64 |
| Furnishing | 2,535 | 58 |
| | <hr/> | 47,882 22 |
| <i>Carried forward</i> | \$1,512,500 | 61 |

| | | |
|---|----------------|------------|
| <i>Brought forward</i> | \$1,512,500 61 | |
| Primary School, Glenway Lot : | | |
| Site | | 52 50 |
| Primary School, Henry L. Pierce District
(John Greenleaf Whittier School) : | | |
| Site | \$9,000 00 | |
| Building | 28,380 61 | |
| | <hr/> | 37,380 61 |
| Primary School, Howard-avenue Lot : | | |
| Site | | 20 46 |
| Primary School, Hugh O'Brien District
(Samuel W. Mason School) : | | |
| Site | \$382 75 | |
| Building | 77,583 17 | |
| | <hr/> | 77,965 92 |
| Primary School, Lewis District : | | |
| Site | | 26,431 05 |
| Primary School, Lyman District
(James Otis School) : | | |
| Site | \$10,187 50 | |
| Building | 25,021 66 | |
| | <hr/> | 35,209 16 |
| Primary School, Martin District
(Farragut School. Total cost of site, building
and furnishing, \$201,145.76) : | | |
| Building | \$28,874 46 | |
| Furnishing | 3,019 46 | |
| | <hr/> | 31,893 92 |
| Primary School, Tuckerman Lot : | | |
| Site | \$28 50 | |
| Building | 1,708 60 | |
| | <hr/> | 1,737 10 |
| School-house, Phillips District
(Washington School) : | | |
| Site | \$103,223 83 | |
| Building | 176,964 77 | |
| Furnishing | 8,797 77 | |
| | <hr/> | 288,986 37 |
| <i>Miscellaneous :</i> | | |
| Engineering expenses | \$19,954 57 | |
| Incidental expenses, including
salaries, blue prints, station-
ery, engineer supplies, horse
and automobile hire | 16,888 57 | |
| | <hr/> | 36,843 14 |
| <i>Carried forward</i> | \$2,096,903 06 | |

| | | |
|--|--|----------------|
| <i>Brought forward</i> | | \$2,096,903 06 |
| Amount voted and set aside, but not expended
to date by Schoolhouse Commissioners, for
Sanitation, Fire Protection, Engineering and
Office Expenses, Sites, Construction and Fur-
nishing of New Buildings | | 820,072 89 |
| <i>Balance of appropriation, undistributed</i> | | 363,357 17 |
| | | <hr/> |
| | | \$3,280,333 12 |
| | | <hr/> |

II.

*Subdivision of Expenses, 1904-1905. Land and Buildings
for Schools.*

| | | |
|----------------------------------|--|----------------|
| Grammar Schools | | \$928,845 44 |
| Primary Schools | | 826,430 64 |
| High Schools | | 190,091 32 |
| Manual Training Schools | | 113,716 18 |
| Not chargeable to any one school | | 37,819 48 |
| | | <hr/> |
| Total | | \$2,096,903 06 |
| | | <hr/> |

APPENDIX III.

APPROPRIATIONS FOR RENTALS, FURNITURE,
REPAIRS, ALTERATIONS AND EXPENSES
OF THE COMMISSION.

I.

During the year February 1, 1904, to February 1, 1905, the following sums were expended by the Schoolhouse Department for furniture, repairs, alterations, rents, and expenses of the Commission:

| | |
|---|--------------------------|
| February 1, 1904, appropriation | \$370,000 00 |
| July 25, 1904, amount transferred to School Committee | 12,694 27 |
| | <hr/> \$357,305 73 <hr/> |

Furniture, Repairs, etc.:

| | |
|--|-------------|
| Carpentry, lumber, and hardware | \$60,252 15 |
| Furniture | 40,083 17 |
| Heating apparatus | 33,398 46 |
| Electric wiring and fixtures | 18,890 93 |
| Painting and glazing | 16,149 50 |
| Roofing and gutters | 15,989 17 |
| Plumbing | 15,898 04 |
| Grading of school yards | 13,491 36 |
| Salaries of inspectors | 12,000 00 |
| Masonry, paving, and drains | 9,410 76 |
| Blackboards, repairs, also new slate boards and setting up | 7,907 35 |
| Whitening and plastering | 7,823 99 |
| Locks, electric bells, telephones | 7,163 33 |
| Rental and care auxiliary fire alarm boxes | 4,390 01 |
| Gas fitting and fixtures | 3,295 48 |
| Ventilation (galvanized-iron work) | 3,031 87 |
| Iron fences, wire screen work | 2,404 71 |
| Printing, stationery, postage | 2,135 73 |
| Teaming | 1,619 49 |
| Flagstaffs, new, and care of old | 1,542 46 |
| Electric motors and engines | 1,379 21 |

| | |
|----------------------------------|--------------------------|
| <i>Carried forward</i> | <hr/> \$278,257 17 <hr/> |
|----------------------------------|--------------------------|

| | |
|---|---------------------|
| <i>Brought forward</i> | \$278,257 17 |
| Cleaning building, including supplies | 1,295 84 |
| Gymnasium apparatus | 1,053 01 |
| Care of lawns and planting | 816 80 |
| Gardens in school yards | 804 15 |
| Travelling expenses | 600 00 |
| Horse-keeping, etc., automobile hire | 598 90 |
| Asphalting | 443 12 |
| Rubber stair treads | 309 88 |
| Plans, blue printing, advertising | 271 50 |
| Prism glass, furnishing and setting | 214 25 |
| | <hr/> |
| | \$284,664 62 |
| <i>Rentals, etc.:</i> | |
| Grammar Schools | \$14,866 29 |
| Primary Schools | 10,946 22 |
| High Schools | 9,813 80 |
| Kindergarten Schools | 7,280 00 |
| Evening Drawing Schools | 2,488 00 |
| Manual Training Schools | 1,454 34 |
| Cooking Schools | 1,154 33 |
| | <hr/> |
| | 48,002 98 |
| <i>Administration Expenses:</i> | |
| Salaries | \$17,742 94 |
| Rental of offices | 4,200 00 |
| Care of office and electric light, | 1,146 38 |
| Stationery and supplies | 783 70 |
| Messenger service and telephone, | 765 11 |
| | <hr/> |
| | 24,638 13 |
| | <hr/> |
| | <u>\$357,305 73</u> |

II.

GENERAL SUBDIVISION OF EXPENSES.

Rents, salaries, furniture, repairs, and alterations in school buildings, February 1, 1904, to February 1, 1905.

| | |
|-------------------------------------|---------------------|
| Grammar Schools | \$129,976 52 |
| Primary Schools | 97,421 24 |
| High Schools | 62,156 44 |
| Miscellaneous | 45,176 26 |
| Kindergarten Schools | 9,866 82 |
| Manual Training Schools | 5,608 95 |
| Evening Drawing Schools | 2,718 05 |
| Evening Elementary School | 2,000 00 |
| Cooking Schools | 1,470 01 |
| School for Deaf Mutes | 911 44 |
| | <hr/> |
| | <u>\$357,305 73</u> |

III.

SUBDIVISION AS TO SCHOOLS.

SOUTH END AND BACK BAY.

| | | |
|-------------------------------|------------|-------------|
| Appleton street | \$3,825 87 | |
| Charles C. Perkins | 344 64 | |
| Cook | 785 80 | |
| Dwight | 952 90 | |
| English High | 9,776 95 | |
| Everett | 1,078 07 | |
| Franklin | 2,175 34 | |
| Girls' High | 8,342 25 | |
| Horace Mann | 911 44 | |
| Joshua Bates | 544 87 | |
| Mechanic Arts High | 1,764 08 | |
| Normal | 2,477 22 | |
| Prince | 2,542 24 | |
| Public Latin | 2,930 10 | |
| Rice | 1,404 17 | |
| Rutland street | 944 47 | |
| West Concord street | 1,385 28 | |
| | <hr/> | \$42,185 69 |

CITY PROPER.

| | | |
|----------------------------|----------|----------|
| Andrews | \$738 23 | |
| Brimmer | 2,831 68 | |
| Carver street | 11 25 | |
| Pierpont | 93 40 | |
| Quincy | 1,755 37 | |
| Skinner | 239 84 | |
| Tyler street | 583 53 | |
| Wait | 628 99 | |
| Warrenton street | 70 44 | |
| Way street | 418 33 | |
| Winthrop | 1,240 20 | |
| | <hr/> | 8,611 26 |

NORTH AND WEST ENDS.

| | | |
|----------------------------------|------------|-------------|
| Baldwin | \$608 88 | |
| Bowdoin | 1,667 94 | |
| Christopher Columbus | 85 25 | |
| Cushman | 2,102 28 | |
| Eliot | 4,566 56 | |
| Emerson | 502 70 | |
| | <hr/> | |
| <i>Carried forward</i> | \$9,533 61 | \$50,796 95 |

| | | | | |
|------------------------|---|---|------------|-------------|
| <i>Brought forward</i> | . | . | \$9,533 61 | \$50,796 95 |
| Freeman | . | . | 1,380 08 | |
| Grant | . | . | 446 60 | |
| Hancock | . | . | 2,394 32 | |
| Hancock Annex | . | . | 232 19 | |
| Mayhew | . | . | 2,524 17 | |
| North Margin street | . | . | 62 50 | |
| Phillips | . | . | 1,008 30 | |
| Paul Revere | . | . | 1,623 77 | |
| Pormort | . | . | 818 84 | |
| Sharp | . | . | 424 56 | |
| Somerset street | . | . | 540 86 | |
| Wells | . | . | 1,239 36 | |
| Winchell | . | . | 1,715 40 | |
| Washington | . | . | 56 27 | |
| | | | <hr/> | 24,000 83 |

ROXBURY, EAST OF COLUMBUS AVENUE.

| | | | | |
|------------------------|---|---|-------------|-------------|
| Aaron Davis | . | . | \$1,092 45 | |
| Abby W. May | . | . | 243 32 | |
| Albert Palmer | . | . | 1,388 02 | |
| Asa Gray | . | . | 758 03 | |
| Bartlett street | . | . | 537 96 | |
| Dearborn | . | . | 1,060 58 | |
| Dillaway | . | . | 1,603 28 | |
| Dudley | . | . | 4,380 77 | |
| Ellis Mendell | . | . | 135 51 | |
| George Putnam | . | . | 1,734 36 | |
| George street | . | . | 690 92 | |
| Howard avenue | . | . | 984 97 | |
| Howard avenue Annex | . | . | 86 40 | |
| Hugh O'Brien | . | . | 1,625 48 | |
| Hugh O'Brien Annex | . | . | 67 53 | |
| Hull | . | . | 1,396 11 | |
| Hyde | . | . | 961 68 | |
| Lewis | . | . | 2,291 05 | |
| Lewis Annex | . | . | 2 50 | |
| Mt. Pleasant avenue | . | . | 115 71 | |
| Miles Standish | . | . | 1,759 74 | |
| Old Roxbury High | . | . | 414 56 | |
| Phillips Brooks | . | . | 1,647 66 | |
| Roxbury High | . | . | 8,562 75 | |
| Ruggles street | . | . | 29 65 | |
| Sherwin | . | . | 5,870 20 | |
| School street | . | . | 1,418 23 | |
| Thornton street | . | . | 64 94 | |
| W. L. P. Boardman | . | . | 593 64 | |
| William Bacon | . | . | 869 91 | |
| | | | <hr/> | |
| <i>Carried forward</i> | . | . | \$42,387 91 | \$74,797 78 |

| | | | | |
|------------------------|---|---|-------------|-------------|
| <i>Brought forward</i> | . | . | \$42,387 91 | \$74,797 78 |
| Williams | . | . | 271 34 | |
| Winthrop street | . | . | 255 26 | |
| | | | <hr/> | 42,914 51 |

ROXBURY, WEST OF COLUMBUS AVENUE.

| | | | | |
|------------------|---|---|-------|------------|
| Comins | . | . | . | \$2,546 28 |
| Cottage place | . | . | . | 418 88 |
| Farragut | . | . | . | 155 83 |
| Heath street | . | . | . | 122 72 |
| Ira Allen | . | . | . | 668 73 |
| Jefferson | . | . | . | 121 24 |
| Lowell | . | . | . | 967 58 |
| Lowell Annex | . | . | . | 1,995 57 |
| Lucretia Crocker | . | . | . | 328 35 |
| Martin | . | . | . | 771 76 |
| Old Ira Allen | . | . | . | 311 03 |
| Phillips street | . | . | . | 242 12 |
| Smith street | . | . | . | 65 90 |
| Wyman street | . | . | . | 353 46 |
| | | | <hr/> | 9,069 45 |

JAMAICA PLAIN AND WEST ROXBURY.

| | | | | |
|-----------------------------------|---|---|-------|-----------|
| Agassiz | . | . | . | \$498 70 |
| Bowditch | . | . | . | 1,745 12 |
| Canterbury street | . | . | . | 172 51 |
| Charles Sumner | . | . | . | 855 74 |
| Chestnut avenue | . | . | . | 470 22 |
| Francis Parkman | . | . | . | 171 68 |
| Florence street | . | . | . | 373 49 |
| Henry Vane | . | . | . | 188 11 |
| Hillside | . | . | . | 340 22 |
| Longfellow | . | . | . | 1,082 35 |
| Margaret Fuller | . | . | . | 487 07 |
| Mt. Vernon | . | . | . | 918 31 |
| Old Agassiz | . | . | . | 277 10 |
| Old Baker street | . | . | . | 75 46 |
| Phineas Bates | . | . | . | 83 29 |
| Robert G. Shaw | . | . | . | 1,566 96 |
| Stephen M. Weld | . | . | . | 200 40 |
| Washington street (Forest Hills), | . | . | . | 126 93 |
| Washington street (Germantown), | . | . | . | 349 50 |
| West Roxbury High | . | . | . | 1,411 43 |
| | | | <hr/> | 11,394 59 |

SOUTH BOSTON.

| | | | | |
|------------------------|---|---|------------|--------------|
| Benjamin Pope | . | . | . | \$585 28 |
| Benjamin Dean | . | . | . | 432 37 |
| | | | <hr/> | |
| <i>Carried forward</i> | . | . | \$1,017 65 | \$138,176 33 |

| | | | | | |
|------------------------|---|---|---|------------|--------------|
| <i>Brought forward</i> | . | . | . | \$1,017 65 | \$138,176 33 |
| Bigelow | . | . | . | 4,746 87 | |
| Capen | . | . | . | 478 74 | |
| Choate Burnham | . | . | . | 207 65 | |
| Clinch | . | . | . | 360 36 | |
| Cyrus Alger | . | . | . | 1,051 48 | |
| Drake | . | . | . | 614 60 | |
| Gaston | . | . | . | 535 28 | |
| Hawes Hall | . | . | . | 597 58 | |
| John A. Andrew | . | . | . | 1,014 76 | |
| Lawrence | . | . | . | 2,459 57 | |
| Lincoln | . | . | . | 977 42 | |
| Norcross | . | . | . | 961 76 | |
| Old Parkman | . | . | . | 500 78 | |
| Oliver Hazard Perry | . | . | . | 8 35 | |
| Parkman | . | . | . | 643 78 | |
| Samuel G. Howe | . | . | . | 780 63 | |
| Shurtleff | . | . | . | 961 11 | |
| South Boston High | . | . | . | 3,152 19 | |
| Simonds | . | . | . | 199 90 | |
| Thomas N. Hart | . | . | . | 1,047 35 | |
| Ticknor | . | . | . | 323 38 | |
| Tuckerman | . | . | . | 737 77 | |
| | | | | <hr/> | 23,378 96 |

DORCHESTER.

| | | | | | |
|------------------------|---|---|---|-------------|--------------|
| Adams street | . | . | . | \$491 88 | |
| Atherton | . | . | . | 355 89 | |
| Benjamin Cushing | . | . | . | 442 09 | |
| Bailey street | . | . | . | 698 95 | |
| Bailey street Annex | . | . | . | 307 74 | |
| Bon Homme Richard | . | . | . | 18 77 | |
| Brewster | . | . | . | 190 88 | |
| Brewster Annex | . | . | . | 121 11 | |
| Christopher Gibson | . | . | . | 2,383 34 | |
| Dorchester avenue | . | . | . | 506 18 | |
| Dorchester High | . | . | . | 7,672 85 | |
| Edward Everett | . | . | . | 1,074 35 | |
| Gilbert Stuart | . | . | . | 1,078 66 | |
| Glenway | . | . | . | 377 00 | |
| Glenway Annex | . | . | . | 12 08 | |
| Harbor View street | . | . | . | 283 20 | |
| Harris | . | . | . | 684 68 | |
| Henry L. Pierce | . | . | . | 1,620 94 | |
| Little Em'ly | . | . | . | 11 51 | |
| Lyceum Hall | . | . | . | 545 17 | |
| Mather | . | . | . | 801 72 | |
| Mayflower | . | . | . | 173 30 | |
| | | | | <hr/> | |
| <i>Carried forward</i> | . | . | . | \$19,852 29 | \$161,555 29 |

| | | | | |
|------------------------|---|---|-------------|--------------|
| <i>Brought forward</i> | . | . | \$19,852 29 | \$161,555 29 |
| Mary Hemenway . | . | . | 2,307 69 | |
| Minot . | . | . | 799 96 | |
| Marshall . | . | . | 289 69 | |
| Old Dorchester High . | . | . | 831 79 | |
| Old Edward Everett . | . | . | 378 69 | |
| Old Gibson . | . | . | 901 38 | |
| Old Mather . | . | . | 108 13 | |
| Quincy street . | . | . | 253 21 | |
| Roger Wolcott . | . | . | 1,589 31 | |
| Roger Clap . | . | . | 809 03 | |
| Savin Hill . | . | . | 412 74 | |
| Stoughton . | . | . | 278 86 | |
| Thetford street . | . | . | 466 50 | |
| Tileston . | . | . | 838 49 | |
| Walnut street . | . | . | 221 01 | |
| Ward-room building . | . | . | 147 69 | |
| William E. Russell . | . | . | 1,026 96 | |
| | | | <hr/> | 31,513 42 |

CHARLESTOWN.

| | | | | |
|------------------------------|---|---|----------|-----------|
| Adams and Chestnut streets . | . | . | \$519 21 | |
| Bunker Hill Grammar . | . | . | 2,568 42 | |
| Bunker Hill Primary . | . | . | 1,095 28 | |
| Benjamin F. Tweed . | . | . | 721 56 | |
| Charlestown High . | . | . | 994 18 | |
| Common street . | . | . | 1,171 68 | |
| Copley . | . | . | 901 63 | |
| Chauncey place . | . | . | 448 18 | |
| Frothingham . | . | . | 3,294 04 | |
| Frothingham Annex . | . | . | 202 01 | |
| Harvard . | . | . | 2,769 93 | |
| Harvard Hill . | . | . | 719 49 | |
| Mead street . | . | . | 515 65 | |
| Medford street . | . | . | 1,055 56 | |
| Polk street . | . | . | 436 85 | |
| Prescott . | . | . | 1,766 21 | |
| Prescott Annex . | . | . | 49 08 | |
| Warren . | . | . | 2,964 12 | |
| William H. Kent . | . | . | 694 36 | |
| | | | <hr/> | 22,887 44 |

EAST BOSTON.

| | | | | |
|--------------------------|---|---|-------------|--------------|
| Adams . | . | . | \$1,763 89 | |
| Austin . | . | . | 1,042 92 | |
| Blackinton . | . | . | 1,833 10 | |
| Chapman . | . | . | 7,873 47 | |
| Cudworth . | . | . | 1,127 78 | |
| | | | <hr/> | |
| <i>Carried forward</i> . | . | . | \$13,641 16 | \$215,956 15 |

| | | | | |
|------------------------|---|---|-------------|--------------|
| <i>Brought forward</i> | . | . | \$13,641 16 | \$215,956 15 |
| East Boston High | . | . | 2,755 28 | |
| Emerson | . | . | 2,338 69 | |
| Lyman | . | . | 4,254 09 | |
| Noble | . | . | 440 51 | |
| Noble Annex | . | . | 81 26 | |
| Old East Boston High | . | . | 175 30 | |
| Paul Jones | . | . | 244 45 | |
| Plummer | . | . | 1,078 38 | |
| Tappan | . | . | 400 85 | |
| Webb | . | . | 603 62 | |
| | | | <hr/> | 26,013 59 |

BRIGHTON.

| | | | | |
|---|---|---|----------|-----------|
| Aberdeen | . | . | \$393 76 | |
| Auburn | . | . | 93 56 | |
| Bennett | . | . | 859 33 | |
| Bennett Annex | . | . | 249 31 | |
| Brighton High | . | . | 1,930 06 | |
| Everett | . | . | 150 78 | |
| Frederic A. Whitney | . | . | 353 91 | |
| Harvard | . | . | 514 52 | |
| Hobart street | . | . | 127 78 | |
| Old Brighton High | . | . | 25 00 | |
| Oak Square | . | . | 750 98 | |
| Washington Allston | . | . | 1,327 17 | |
| Washington Allston Annex | . | . | 499 61 | |
| William Wirt Warren | . | . | 389 32 | |
| Winship | . | . | 726 03 | |
| | | | <hr/> | 8,391 12 |
| Portable buildings (92) | . | . | . | 8,741 70 |
| Incidentals, not chargeable to any one school | . | . | . | 21,726 32 |
| Administration expenses | . | . | . | 24,638 13 |

HIRED BUILDINGS, RENTS AND REPAIRS.

| | | | | |
|--------------------------|---|---|-------------|--------------|
| Booth Hall | . | . | \$10 00 | |
| Brooks street, Faneuil | . | . | 461 06 | |
| Byron court, 23 | . | . | 158 75 | |
| Beech-street lot | . | . | 125 00 | |
| Bennington-street Chapel | . | . | 280 51 | |
| Broadway, 732 | . | . | 1,680 00 | |
| Chambers street, 103 | . | . | 1,810 76 | |
| Chambers street, 105 | . | . | 1,116 43 | |
| Church of the Redeemer | . | . | 875 60 | |
| Columbus avenue, 147 | . | . | 1,329 65 | |
| Columbus avenue, 1448 | . | . | 1,591 43 | |
| Centre street, 341 | . | . | 250 00 | |
| Chambers street, 33 | . | . | 1,006 99 | |
| | | | <hr/> | |
| <i>Carried forward</i> | . | . | \$10,696 18 | \$305,467 01 |

| | | | | |
|----------------------------------|---|---|-------------|---------------------|
| <i>Brought forward</i> | . | . | \$10,696 18 | \$305,467 01 |
| Chambers street, 38 | . | . | 1,242 75 | |
| Chauncy Hall | . | . | 10,362 10 | |
| Dayton avenue, 1 | . | . | 608 45 | |
| Dudley street, 500 | . | . | 293 47 | |
| Eliot street, J. P. | . | . | 300 00 | |
| Ford and Saratoga streets, East | | | | |
| Boston | . | . | 493 80 | |
| Fourth street, 484 | . | . | 850 43 | |
| Glenway street, 58 | . | . | 162 88 | |
| Greenwood Hall | . | . | 613 67 | |
| Gay Head and Centre streets | . | . | 542 56 | |
| Hotel Richwood | . | . | 121 75 | |
| Heath street, 179 | . | . | 245 50 | |
| Heath street, 255 | . | . | 673 00 | |
| Huntington avenue, 737 | . | . | 110 00 | |
| Huntington avenue, 741 | . | . | 116 00 | |
| Huntington avenue, 766 | . | . | 65 00 | |
| Huntington avenue, 908 | . | . | 60 00 | |
| Hewlett street, 17 | . | . | 259 25 | |
| Lauriat avenue, 170 | . | . | 1,386 48 | |
| Moon street | . | . | 7,888 52 | |
| Methodist Chapel | . | . | 605 00 | |
| North Harvard street, 255 | . | . | 161 19 | |
| North Russell street, 31 | . | . | 4,543 92 | |
| Princeton and Shelby streets | . | . | 151 41 | |
| Parmenter street, 20 | . | . | 1,900 00 | |
| Parmenter street, 32 | . | . | 556 12 | |
| Saratoga street, 399 | . | . | 321 85 | |
| Salem street, 122 | . | . | 432 00 | |
| South Baptist Church | . | . | 1,244 76 | |
| Tremont street, 236 | . | . | 1,168 80 | |
| Tremont street, 1508 | . | . | 600 00 | |
| Tremont street, 1518 | . | . | 600 00 | |
| Tremont street, 1520 | . | . | 121 62 | |
| Tomfohrde Hall | . | . | 164 00 | |
| Unitarian Church, Roslindale | . | . | 603 16 | |
| Walk Hill street, 727 | . | . | 360 00 | |
| Washington street, 2307, Masonic | | | | |
| Hall | . | . | 1,213 10 | |
| | | | | 51,838 72 |
| Total | . | . | | <u>\$357,305 73</u> |

APPENDIX IV.

APPROPRIATIONS FOR SCHOOL-HOUSES.

I.

The following statement shows the expenditures on account of the above appropriations for completing and finishing school-houses turned over to the Schoolhouse Department by the School Committee, February 11, 1902:

| | |
|---|--------------------|
| February 1, 1904, balance of appropriation unexpended | \$15,106 28 |
| July 25, 1904, additional appropriation | 4,008 66 |
| | <u>\$19,114 94</u> |
| Bigelow School : | |
| Additional site | \$4,058 66 |
| Dorchester High School : | |
| Grading | 7,724 58 |
| John A. Andrew School : | |
| Rebuilding fence (street widening) | 976 00 |
| Longfellow School : | |
| Rebuilding fence (street widening) | 100 00 |
| Plummer School : | |
| Additional rooms in attic | 3,588 93 |
| South Boston High School : | |
| Building | 1,500 00 |
| | <u>\$17,948 17</u> |
| Total expenditure 1904-05 | 1,166 77 |
| Balance of appropriation for 1905-06 | <u>\$19,114 94</u> |

II.

Subdivision of expenditures for building and for additional rooms, grading of lots and resetting fences.

| | |
|---------------------------|--------------------|
| High Schools | \$9,224 58 |
| Grammar Schools | 5,144 66 |
| Primary Schools | 3,588 93 |
| | <u>\$17,948 17</u> |

APPENDIX V.

HIRED BUILDINGS.

I.

Rooms in the following buildings have been hired for school purposes; rents, taxes, water rates, heating, lighting, and janitors' expenses paid for the same, amounting to \$48,002.98, during the year, from February 1, 1904, to February 1, 1905:

| For. | Location. | Remarks. |
|---|--|---|
| Bennett District..... | Faneuil Church, Brooks st., | Rent per annum, \$600, including heat and janitor. |
| Comins District..... | Tremont street, 1518..... | Rent per annum, \$600, including heat and janitor. |
| Comins District Kindergarten and Primary..... | Germania Hall, 1448 Columbus avenue..... | Rent per annum, \$1,800, including heat and janitor. |
| Christopher Gibson District Kindergarten..... | Greenwood Hall, Dorchester..... | Rent per annum, \$600, including heat and janitor. |
| Dearborn District..... | Dayton avenue, 1..... | Rent per annum, \$600, including heat and janitor. |
| Elliot District..... | Moon street, St. John's Parochial School..... | Rent per annum, \$11,640, including heat; city pays janitor and water rates; additional rooms (first 3, then 5) hired for evening school; vacated Oct. 1, 1904. |
| Elliot District..... | Salem street, 122..... | Rent per annum, \$480; light, heat and janitor furnished by city; vacated Nov. 1, 1904. |
| Emerson District..... | Bennington-street Chapel, East Boston..... | Rent per annum, \$672, including heat; city pays janitor; vacated May 1, 1904. |
| Emerson District Kindergarten..... | Princeton and Shelby streets, East Boston..... | Rent per annum, \$300, not including heat or janitor; vacated May 20, 1904. |
| Emerson District..... | Ford and Saratoga streets, East Boston..... | Rent per annum, \$480, not including heat, but including janitor; vacated Jan. 1, 1905. |

HIRED BUILDINGS.— *Continued.*

| For. | Location. | Remarks. |
|--|---|---|
| Emerson District..... | Booth Hall..... | Hired for graduating exercises of Blackinton School, at a rental of \$10. |
| Emerson District..... | Saratoga street, 399..... | Rent per annum, \$300, not including heat or janitor. |
| Evening Drawing School..... | Columbus avenue, 147..... | Rent per annum, \$1,300, not including heat or janitor. |
| Evening Drawing School..... | Masonic Hall, 2307 Washington street, Roxbury.. | Rent per annum, \$1,000; city pays water rates, heat and janitor. |
| Gaston District..... | Pilgrim Hall, 732 Broadway, South Boston..... | Rent per annum, \$1,680, including heat and janitor. |
| Gaston District Kindergarten. | Church of the Redeemer, South Boston..... | Rent per annum, \$840, including heat and janitor. |
| George Putnam District Kindergarten..... | Byron court, 23, Roxbury. | Rent per annum, \$360, including janitor, not including heat or water rates; vacated May 1, 1904. |
| George Putnam District..... | Tomfohrde Hall, Boylston Station..... | Rent per annum, \$400, including heat and water rates; city pays janitor; vacated May 1, 1904. |
| Girls' Latin School..... | Chauncy Hall, Copley sq.. | Rent per annum, \$7,000, not including heat, water rates or janitor. |
| Hugh O'Brien District..... | 500 Dudley street..... | Rent per annum, \$420, not including heat or janitor. |
| Hancock District, Kindergarten and Primary..... | Parmenter street, 20..... | Rent per annum, \$1,900, including heat and janitor. |
| Hancock District..... | Parmenter street, 32..... | Rent per annum, \$400, including heat and janitor. |
| John A. Andrew District, Kindergarten..... | Methodist Chapel, Vinton street, South Boston.... | Rent, per annum, \$660, including heat, but not janitor; vacated Dec. 1, 1904. |
| Lincoln District..... | South Baptist Church, East Fourth street, So. Boston, | Rent per annum, \$1,200, including heat and janitor. |
| Longfellow District, Kindergarten and Primary..... | Beech st., Phineas Bates Portable Building | Rent per annum, \$125, for use of land only. |
| Longfellow District..... | Hewlett street, 17..... | Rent per annum, \$240, not including heat or janitor. |
| Longfellow District, Kindergarten and Primary..... | Unitarian Church, Roslindale | Rent per annum, \$600, including heat and janitor. |

HIRED BUILDINGS. — *Continued.*

| For. | Location. | Remarks. |
|-------------------------------|---|--|
| Lowell District..... | Gay Head and Centre streets, Roxbury..... | Rent per annum, \$960, including heat and janitor; vacated July 7, 1904. |
| Lowell District..... | Centre street, 341, Jamaica Plain..... | Rent per annum, \$480, not including heat, water, or janitor; vacated July 1, 1904. |
| Lowell District..... | Heath street, 179..... | Rent per annum, \$420, including heat and janitor; city pays water rates; vacated July 9, 1904. |
| Lowell District Kindergarten, | Heath street, 255..... | Rent per annum, \$720, including heat and janitor; city pays water rates; vacated Dec. 1, 1904. |
| Manual Training School..... | Tremont street, 1508..... | Rent per annum, \$600, including heat and janitor. |
| Manual Training School..... | Eliot street, Jamaica Plain, | Rent per annum, \$300, including heat and janitor. |
| Martin District..... | Tremont street, 1520..... | Rent per annum, \$720, including heat and janitor; city pays water rates; vacated Feb. 12, 1904. |
| Martin District..... | Huntington avenue, 737.... | Rent per annum, \$660, including heat and janitor; city pays water rates; vacated Feb. 18, 1904. |
| Martin District..... | Huntington avenue, 741.... | Rent per annum, \$696, including heat and janitor; city pays water rates; vacated Feb. 14, 1904. |
| Martin District..... | Huntington avenue, 766.... | Rent per annum, \$780, including heat and janitor; vacated Feb. 1, 1904. |
| Martin District..... | Huntington avenue, 908.... | Rent per annum, \$720, including heat and janitor; vacated Feb. 1, 1904. |
| Roger Wolcott District..... | Walk Hill street, 727..... | Rent per annum, \$360, including heat and janitor. |
| Roger Wolcott District..... | Lauriat avenue, 170, Dorchester..... | Rent per annum, \$1,200, including heat, water, and janitor. |
| Shurtleff District..... | East Fourth street, 484, So. Boston..... | Rent per annum, \$600, not including heat, water rates or janitor. |
| Wells District..... | North Russell street, 31.... | Rent per annum, \$4,500, including heat, light and janitor; vacated Dec. 6, 1904. |

HIRED BUILDINGS.— *Concluded.*

| For. | Location. | Remarks. |
|---|-----------------------------|---|
| Wells District..... | Chambers street, 33..... | Rent per annum, \$800, not including heat or janitor; city pays water rates and one-half cost of gas; vacated Dec. 1, 1904. |
| Wells District, Kindergarten and Grammar..... | Chambers street, 38..... | Rent per annum, \$1,080, including heat, janitor and water rates. |
| Wells District..... | Chambers street, 103..... | Rent per annum, \$1,620, including heat and janitor; city pays water rates; vacated Dec. 15, 1904. |
| Wells District, Kindergarten.. | Chambers street, 105..... | Rent per annum, \$900, including heat and janitor; city pays water rates; vacated Dec. 15, 1904. |
| Winthrop District..... | Tremont street, 238..... | Rent per annum, \$3,333.34, including, heat, water and janitor's service. |
| Winthrop District..... | Hotel Richwood..... | Rent per annum, \$520, not including janitor or heat; vacated July 2, 1904. |
| Washington Allston District... | North Harvard street, 255.. | Rent per annum, \$150; city pays water rates and janitor. |

II.

SUBDIVISION.

The following shows the rents, taxes, water rates, heating, lighting, and janitor's service, paid for each building hired during the year :

| | |
|--|--------------------|
| 23 Byron court | \$142 00 |
| Beech-street lot, Roslindale | 125 00 |
| Bennington-street Chapel, East Boston | 224 00 |
| 732 Broadway, South Boston | 1,680 00 |
| Church of the Redeemer, East Fourth street, South Boston | 840 00 |
| 341 Centre street, Jamaica Plain | 250 00 |
| 147 Columbus avenue | 1,300 00 |
| Presbyterian Chapel, 33 Chambers street | 936 28 |
| St. Andrews Chapel, 38 Chambers street | 1,180 00 |
| Chauncy Hall, Copley square | 9,813 80 |
| Trustee's Eliot Building, Eliot street, Jamaica Plain | 300 00 |
| <i>Carried forward</i> | <i>\$16,791 08</i> |

| | |
|---|------------------------|
| <i>Brought forward</i> | \$16,791 08 |
| Germania Hall, 1448 Columbus avenue, Roxbury . | 1,404 33 |
| Greenwood Hall, Glenway, Dorchester | 600 00 |
| 331-333 Centre street, corner Gay Head street,
Jamaica Plain | 480 00 |
| 179 Heath street, Roxbury | 223 00 |
| 255 Heath street, Roxbury | 673 00 |
| 17 Hewlett street, Roslindale | 240 00 |
| 737 Huntington avenue, Roxbury | 110 00 |
| 741 Huntington avenue, Roxbury | 116 00 |
| 766 Huntington avenue, Roxbury | 65 00 |
| 908 Huntington avenue, Roxbury | 60 00 |
| 170 Lauriat avenue, Dorchester | 1,050 00 |
| Parochial School, Moon street | 7,739 40 |
| Methodist Chapel, Vinton street, South Boston . | 605 00 |
| 31 North Russell street | 4,125 00 |
| North End Union, 20 Parmenter street | 1,900 00 |
| 32 Parmenter street | 400 00 |
| Princeton and Shelby streets, East Boston . . . | 125 00 |
| Roxbury House Association, 1 Dayton avenue,
Roxbury | 600 00 |
| 399 Saratoga street, East Boston | 300 00 |
| South Baptist Church, East Fourth street, South
Boston | 1,200 00 |
| 1508 Tremont street, Roxbury | 600 00 |
| 1518 Tremont street, Roxbury | 600 00 |
| 1520 Tremont street, Roxbury | 121 62 |
| Tomfohrde Hall, 91 Boylston street, Roxbury . | 134 00 |
| Unitarian Church, South street, Roslindale . . | 600 00 |
| 727 Walk Hill street, Dorchester | 360 00 |
| 2307 Washington street, Roxbury | 1,188 00 |
| Booth Hall, Orient Heights | 10 00 |
| 484 East Fourth street, South Boston | 628 67 |
| Ford and Saratoga streets, East Boston . . . | 480 00 |
| 103 Chambers street | 1,544 58 |
| 105 Chambers street | 884 58 |
| 122 Salem street | 400 00 |
| 238 Tremont street | 972 89 |
| Brooks street, Brighton | 400 00 |
| Hotel Richwood, Tremont street | 90 00 |
| 255 North Harvard street | 41 83 |
| 500 Dudley street | 140 00 |
|
Total |
<u>\$48,002 98</u> |

APPENDIX VI.

REPORT ON SCHOOL FURNITURE.

During the last school year now closing I was at work on the school furniture, not only with regard to the actual adjusting for the present classes, but also for the purpose of getting data on which to shape our future course in the matter. Some provision will have to be made for regulating a yearly adjustment for the changing classes. For this and for new installments of furniture we shall now have more fixed rules of measurement and adjustment than we have had, especially in regard to the proper use of the new back supports. There are certain things to be attended to in regulating the distance from seat to chair to get the best average fitting for the many grades and sizes of children that must be accommodated by adjusting only three sizes of desks and two chair sizes.

This is not unexpected. The whole matter of adjustable school furniture has been approached *de novo* with regard for definite data of past experience, but without much heed to empirical rules. As a consequence this work has been largely experimental.

I am inclined to consider the experiment very successful, and have only changes in detail to suggest. The teachers are pleased with the new apparatus as a rule. The rooms look well, the scholars sit better and have enough room to turn in their seats to face the blackboards and to get in and out of their seats. After they have had time to get used to the new type of back-rest they seem at least as comfortable, and I think more comfortable, than with the higher chair backs. Certainly the *best* erect sitting position is a much better one with the new support. With older scholars the writing position is equally better, and the theory of support of the pelvis in this position has fully justified itself in practice. With children below grade VI., fitted with the larger furniture, and in grade I. and II. in the smaller seats, this support in writing is not always efficient. This is because we have the desks set at a constant distance, and in each size children of the smaller set come so far away from the desk that they necessarily slide or swing away from the back-rest. This is accentuated by the contractor's error in putting a number of desks at an inch plus distance instead of zero.

Where the seats are set at zero distance the back row of seats at least (which have the horizontal adjustment) can be made to fit all the children. Where the seats are set wrong even this adjustment is of course insufficient.

In a number of rooms the back row was systematically used to experiment with as to distances, and I think the data are now sufficient to work with.

For the *best* arrangement we should have the distance (measured horizontally from edge of desk to top of back) vary from $10\frac{1}{2}$ to $13\frac{1}{2}$ inches, as follows:

PLUS AND MINUS.

Grade I., $10\frac{1}{2}$ inches (one inch minus distance). In this grade a chair seat 1 inch shorter would be desirable also. The seat is too deep, and zero is always more convenient than a minus distance for adjustment. Grade II., $10\frac{1}{2}$ inches.

Grade III. and IV., 11 inches, zero distance; Grade V., $11\frac{1}{2}$ inches.

Grade VI., $12\frac{1}{4}$; Grade VII., 13, one inch plus with the small chair.

Grades VIII. and IX., $13\frac{1}{2}$ zero distance.

In actual practice I think it will be desirable, as the grades are not always fixed in advance, to keep large desks for all above Grade IV. with the present zero distance. Grade III. and below call for the small desk, with a distance of 11 inches for Grade III.; where the lowest grades are expected, the distance is to be not over 11; $10\frac{1}{2}$ is enough. If a smaller seat were made for I. and II. all could be set at zero.

HEIGHT OF SEATS AND DESKS.

As for the height of seats, this calls for no comment. It is simply a matter of care and adjustment.

As to the height of desk, I do not see that we shall be able to improve on the School Furniture Company's scale, with $\frac{1}{8}$ increase of desk height per inch of increase of seat height. This brings the desks a little higher than I care to see them, but they can hardly be scaled lower and give room for the knees. The desk depth of course can not be decreased. The height as at present adjusted for is probably our best solution of the matter.

HEIGHT OF BACK-REST.

As to the height of the back support: At the time the curve and breadth now used were determined on, the only rule I had formulated for adjustment was that the most prominent point in the profile of the backboard (about $\frac{1}{3}$ up from the bottom) should come about opposite the fourth lumbar vertebra, *i.e.*, at the height of the hip bone at the side. When desks were put in and adjusted by the contractor's representatives, the backs were not adjusted by any rule at all.

Accordingly, in a number of rooms I corrected the many mal-adjustments on this plan — that is, I adjusted them according to the physiological rule. This proved to be an enormous amount of

work, and with a view to devising a simpler method measurements were taken of the relation of height of back and desk throughout several rooms where I considered the adjustments all satisfactory. The range of variation proved considerable, but, throwing out exceptional cases, the mean of the measurements gave between $\frac{1}{2}$ and $1\frac{1}{2}$ inches, measured from the top of the back-rest, above the level of the near edge of the desk.

For girls it is a little more than for boys, but the difference is slight except for the largest girls. The individual variation apparently runs independent of the other measurements, and I have been unable to make definite allowance for it. The trial was made of an adjustment that gave the back $\frac{3}{4}$ inch, $1\frac{1}{4}$ inches for large desk, above the desk edge. This was done after adjusting seat and desk for height, but without previous measurement for back adjustment. It proved satisfactory for nearly all children except the largest girls, and except occasional children with obviously unusual conformation. Here and there there are also individuals who need an adjustment not called for anatomically, but rendered desirable by some improper sitting attitude.

On the whole, however, this arbitrary adjustment of height, $\frac{3}{4}$ for small and $1\frac{1}{4}$ for large, strikes very close. It is obvious that exact adjustment to the individual is impracticable owing to numbers. We have a back-rest the shape of which accommodates itself nearly to the curve of the average normal back. The new adjustment for height also accommodates the average normal in regard to the height at which this curve shall support. Fortunately it is very easy to "spot" the exceptional cases. I have found that my first walk around the room showed me practically all the scholars that were afterwards found ill-fitted. If adjustment of height of seat and desk are right, the number to be corrected for height of back-rest is really small, not over one in eight as a rule.

There are certain details that may be mentioned here, and for their better consideration I will speak of the schools separately.

The first school fitted was the Marshall, which was fitted with all three sizes of desk. At the start the lid desks (16 by 23) were set on the floor plan of the 15 by 21 desk and had to be changed. As things stand we have

(a.) Desk, 12 by 18; total length from desk to desk, 27 inches; distance desk to top of back, $11\frac{1}{4}$ to $11\frac{1}{2}$; $10\frac{1}{2}$ would be enough; $10\frac{1}{2}$ is one inch minus distance.

(b.) Desk, 15 by 21. Total, 31. Desk to back, $12\frac{1}{2}$. One inch minus distance.

(c.) Desk, 16 by 23. Total, 32. Zero distance. Desk to back, $13\frac{1}{2}$.

The seats here were set 1 to $1\frac{1}{2}$ inches to the left of the centre of the desk. This I consider unnecessary, apparently undesirable, but not worth changing.

William E. Russell School. Fitted to 15 by 21 and 16 by 23 desks, also set symmetrically to the left. The distances are correct. Results are satisfactory, except that here, as in the

Marshall, there is complaint of too little storage room in the desks for the higher grades.

Farragut School. Here all the desks are 12 by 18, all set wrong (*i.e.*, at one inch plus distance), and since scholars are all of lower (3d downward) grades the adjustments are insufficiently accurate. This shows clearly in the clumsy writing attitude. So much room is useless, and as no support is offered in the writing position the children hitch forward and in writing sit badly. Where zero distance, $11\frac{1}{2}$ from desk to back, as in the other schools, was used, we got on tolerably, even with children small enough to call for $10\frac{1}{2}$ measurement, but these desks are in fact distant $12\frac{3}{4}$ instead of $10\frac{1}{2}$. How this error crept in I do not know. It would be desirable to change these seats (without moving any desks) by hitching the seat forward $1\frac{3}{4}$ inches to a distance of 11 inches. In some of the rooms of this Farragut School the fifth row of seats from the front has been omitted. This gives a better arrangement if the extra seven seats can be spared. There is also complaint here (even in the Grade III.) of lack of storage room. This complaint is confined to a few teachers.

Paul Jones School. 12 by 18 and 15 by 21 desks, nearly all the former. Here again the chairs have been put in wrong. Throughout the building the seat distance is a plus of about one inch. This is bad throughout. Here it is particularly bad in one room, where Grade V. is seated in the larger desks and chairs with the extra inch of distance due to the error of seating. This room should certainly be changed to give 12 inches or $12\frac{1}{2}$ instead of the present 14 inches. As to the others, the remarks on the Farragut hold good here also.

This is the first building to be furnished with the dark finish. This in its present stage must be called a failure. A new color and finish has now been adopted which has proved satisfactory.

Ellis Mendell School. All small desks, 12 by 18. All are set at greater distance than the scale provides for. All have the dark finish, which "crocks" badly. Classes in only four of the rooms, none above Grade III.

I would respectfully suggest that, after such of the changes above mentioned have been carried out as the Commissioners consider desirable, a practicable routine would be to issue some rules for setting up, as suggested on an accompanying sheet, and, with the desks and chairs in place, to have the janitors go over the adjustments each autumn. The rules accompanying and the scale measure for adjusting backs could be given to each janitor. In this way the great majority of adjustments would be gotten right, and I could go over all the rooms and pick out and readjust those which, for reason of special shape or size or for the corrections of vicious attitudes, might need to have readjustments made.

RULES FOR SETTING UP FURNITURE.

Large desks and chairs for Grades VI. and VII., and higher grades, to have the lid desk.

For the 16 by 23 lid desk, the total distance from desk to desk to be 32 inches. From edge of desk to top of back-rest to be $13\frac{1}{2}$ inches. This is zero distance.

For the 15 by 21 desk, the total distance to be 31 inches. To be set at zero distance. Distance from edge of desk to top of back, $13\frac{1}{2}$ inches.

If these desks are to be used for Grade V. or lower, with the large chair, they should be set one inch closer, *i.e.*, one inch minus distance.

For the 12 by 18 desk and small chair, the total distance should be 27 inches. The distance in general to be $11\frac{1}{2}$ from desk to back, *i.e.*, zero distance, but for Grades I. and II. should be $10\frac{1}{2}$, that is, one inch minus distance.

These rules apply where no definite knowledge is obtainable as to the exact grades to be accommodated in the rooms. Where such knowledge is obtainable, the distances of the desks from one another are as stated in the rules, but the distance from desk top to chair back follows the scale as here appended :

| | | | | |
|---------------|---|---|---|---------------------|
| Grade I., II. | . | . | . | $10\frac{1}{2}$ in. |
| " III., IV. | . | . | . | 11 " |
| " V. | . | . | . | $11\frac{1}{2}$ " |
| " VI. | . | . | . | $12\frac{1}{2}$ " |
| " VII. | . | . | . | 13 " |
| " VIII., IX. | . | . | . | $13\frac{1}{2}$ " |

This rule has now been followed in setting up a large number of rooms, and the results are very satisfactory. It proves in practice that the chair seats adjustable for distance (provided in each back row) are not ordinarily needed ; the routine adjustment for distance by rule is accurate enough.

CONCLUSION.

There remain two things to be done to render this new system of seating satisfactory and adapted to a succession of different classes through the school-rooms.

(a.) The provision of a third model for seat-backs. This is rendered necessary by the radical difference in size and shape of the hips and pelvis in certain girls before and after puberty, which makes it impossible to fit both classes with any one type of support.

The plan under advisement is to have a certain proportion of back-rests made a trifle higher and with different curves, adapted to girls of fuller development, and to have them so constructed as to fit the same back-irons now in place on the seats. Where in the high schools, and to some extent in grammar grades, scholars are found for whom such back-rests are needed the special back-rest can be substituted for the ordinary one. It

will not be practicable to decide in advance as to which back-rest will be needed, for the larger one will be entirely unsuited to the less developed girls (to say nothing of the boys), who are in the majority, at least in the grammar grades.

(b.) Some administrative arrangement by which yearly adjustment can be carried out as each room receives its new class. Readjustment through the year can be left to the teachers as occasion arises, but for the adjustment of thousands of seats each autumn, some systematic provision must be made. We have simplified the adjustment as far as possible, and made it a matter of rule, not guess. If the adjustment is not carried out, of course, much of the advantage of having adjustable furniture is lost. This is true, irrespective of the type of furniture in use. Adjustable furniture must be adjusted.

Respectfully submitted,

F. J. COTTON, M.D.

APPENDIX VII.

REPORT ON MOISTENING APPARATUS.

FARRAGUT SCHOOL.

This building is equipped with a fan system for heating and ventilating. The main air duct, after leaving the fan, branches right and left and runs to the opposite ends of the building. To make comparative tests a large shallow pan was placed in one branch. In this pan were submerged brass steam pipes, which, when steam was turned on, caused vapor in a cloud to rise from the surface of the water. The air forced by the fan in passing over the water carried the vapor along into the rooms in this end of the building. The other end of the building was supplied with air in the usual way, that is, without additional moisture. Recording thermometers and hygrodeiks were placed in rooms at each end of the building, and records of temperature and humidity were kept continuously. These records showed plainly the difference in atmospheric conditions in the rooms, which in the rooms unmoistened is an unnatural and unhealthy condition. The natural percentage of moisture in outside air in summer time is about 65 to 70 per cent., and is a very comfortable atmospheric condition. The records in the school show, without artificial moisture, 15 to 30 per cent.; with artificial moisture, 30 to 50 per cent. The full 60 to 70 per cent. can be obtained artificially, though in cold weather, if the air is more moist than about 50 per cent., the windows may be seriously clouded with vapor.

The experiments have not been conducted for a sufficiently long time to give reliable data as to the effect on the building, furniture, or teachers and pupils. It was, however, observed that, where in certain rooms 70 degrees was necessary for comfort, with only 12 to 20 per cent. moisture, 67 to 68 degrees was sufficiently high a temperature when the percentage of moisture was up to 45 to 50 degrees. This would seem to indicate a possible saving in fuel for heating.

ANDREWS SCHOOL.

At this school a different system was tried from that at the Farragut. The building is equipped with a fan system. A series of perforated steam pipes was placed in front of the inlet to the fan. As the air was drawn across the pipes into the fan, it carried along with it the steam or vapor that came from the

pipes. A valve was placed on the supply to the steam pipes. This valve was connected to a humidostat placed in one of the school-rooms. The humidostat was affected by the moisture in the room, and caused the valve to open or close, as more or less moisture than 50 per cent. was required in the room. The results at first, owing to the perforated pipes being too small, were slight. Later the pipes were increased, and the instruments showed a percentage of from 40 to 60 per cent. of humidity. The experiment has not been going on a sufficiently long time to determine whether the control valve is a success, or to determine the effect on the children and building.

It is, however, pretty clearly shown that sufficient moisture can be sent into the rooms with the air and in such a manner as to make the atmosphere in the school-rooms similar to the natural outside atmosphere in summer time. It remains to be proven whether the results obtained will be at too great a cost.

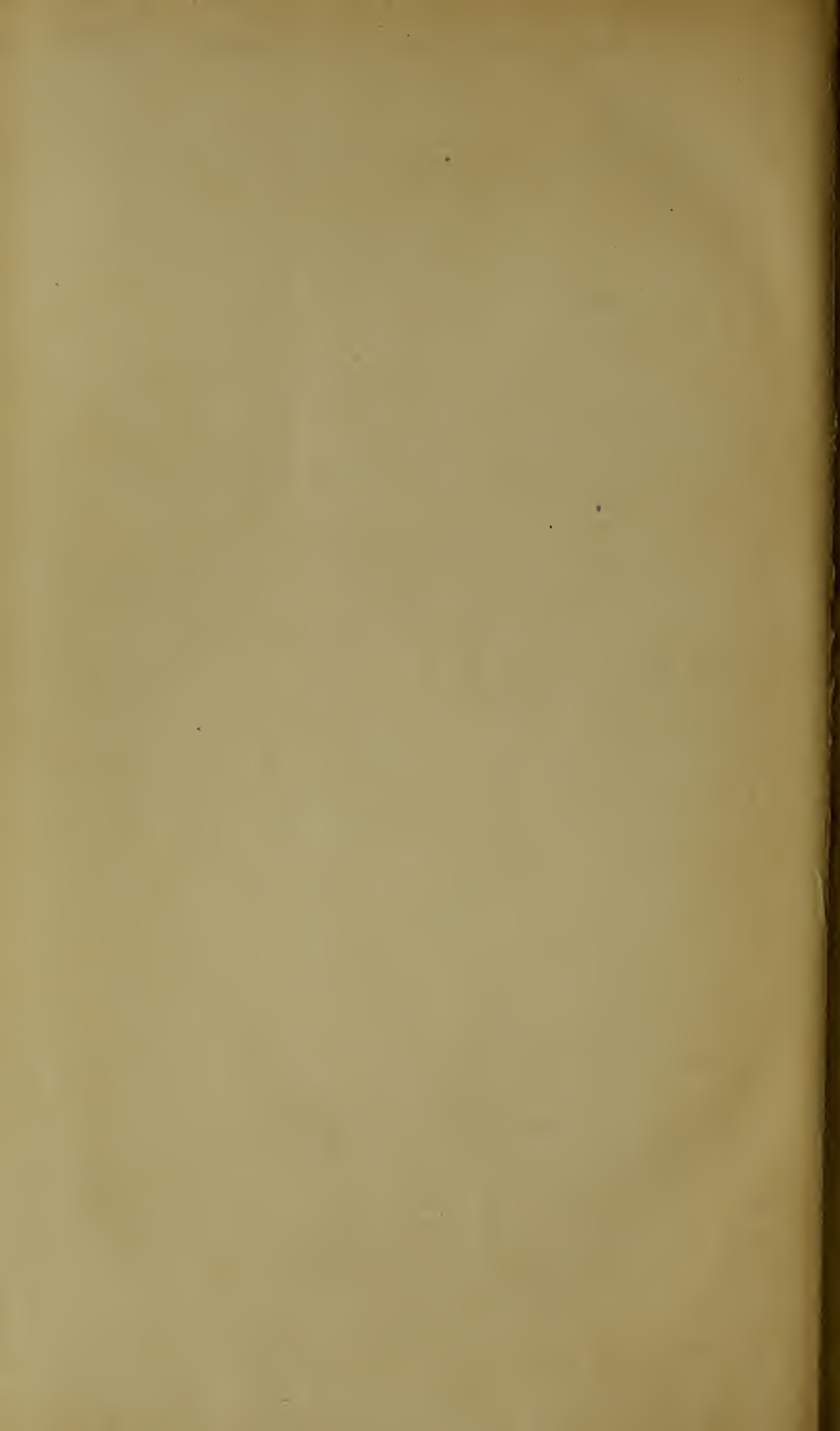
BRIMMER SCHOOL.

This building is equipped with an old system, gravity heating apparatus, that is, with indirect stacks of radiators and floor registers, supplemented by direct. In this building an apparatus was installed in one of the rooms of a character similar to one of the types used in cotton mills for humidifying. The recording hygrometer showed that in order to get any results in moistening the air, it was necessary to use very hot water. When water was used at a temperature of 60 to 70 degrees, the instruments showed no increase in humidity over the percentage showed in a similarly situated room in the same building. On account of the nature of the apparatus and the expense of installation, the experiment was not considered a success.

One thing, however, was clearly demonstrated, namely, that the air was thoroughly washed and cleared of dust particles. On sweeping the room, the janitor reported that, whereas in other rooms, without the apparatus, when he swept there were large quantities of dust to be seen in the air, and later on the furniture, in this room, shortly after the room was swept, the atmosphere was all clear, and it was hardly necessary to dust the furniture. On going to the water-tank, in the basement, the dust was found collected in large quantities on the surface of the water, showing plainly the effect of the apparatus on the air.

Respectfully submitted,

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